CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. R2-2002-0071
NPDES PERMIT NO. CA0004979

WASTE DISCHARGE REQUIREMENTS FOR:

GENERAL CHEMICAL CORPORATION

PITTSBURG, CONTRA COSTA COUNTY

As adopted on June 19, 2002
Effective on July 1, 2002
Expires on May 31, 2007

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FINDINGS

The California Regional Water Quality Control Board, San Francisco Bay Region, hereinafter called the Board, finds that:

1. *Discharger and Permit Application.* The General Chemical Corporation (hereinafter referred to as the Discharger), has applied to the Board for reissuance of waste discharge requirements and a permit to discharge industrial wastewater to waters of the State and the United States under the National Pollutant Discharge Elimination System (NPDES).

Facility Description

2. The Discharger owns and operates the facility located at 501 Nichols Road in the city of Pittsburg, Contra Costa County. The Discharger manufactures electronic grade chemicals (e.g., HCl, HF, HNO_3, H_2SO_4, CH_3COOH, NH_4OH, and H_3PO_4) and aluminum sulfate (alum). Within the plant boundaries, one other company (Poly Pure) operates facilities for the production of water treatment polymers. The electronic chemical processes, although highly technical, are best characterized as purification whereby commercial grade chemicals are purchased as raw materials and processed through numerous steps to meet the purity requirements of the semiconductor industry. These steps vary by specific chemical and may include: distillation, ion exchange, absorption, chemical treatment, filtration, and blending. Solvent packaging operations previously conducted at the site have ceased operations in 2001 since issuance of the previous Order.

3. The U.S. Environmental Protection Agency (USEPA) and the Board have classified this discharge as a major discharge.

Purpose of Order

4. Waste Discharge Requirements in Order No. 96-032, adopted by the Board on March 20, 1996, expired but was administratively continued in effect past its expiration date. The Discharger has applied for reissuance of waste discharge requirements and a permit to discharge waste under National Pollutant Discharge Elimination System (NPDES) by application dated September 18, 2000.

5. This NPDES permit regulates the discharge of wastewater to waters of the State and the United States. The Discharger discharges process wastewater into Suisun Bay, a water of the State and the

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United States. This Order replaces Order No. 96-032 and regulates the discharge of wastewater from the facility to Suisun Bay.

Treatment Process Description

6. *Treatment Process.* Wastewater treatment consists of pH neutralization followed by chemical addition and settling in an unlined lagoon separated by a dike from Suisun Bay. Sanitary wastewater is separately treated in a septic tank with effluent disposal to the Delta Diablo Sanitation District. A treatment process schematic diagram is included as **Attachment A** of this Order.

Discharge Description

7. Wastewater consists of water from process area air vent scrubbers, non-contact cooling water from the acid purification system, lab scrubber process equipment flush waters, boiler blowdown, quality assurance/control sink drains and storm water from most areas of the site north of the railroad tracks. "First flush" wastewater from pipe and equipment washing in the chemical packaging areas is stored in hazardous waste tanks pursuant to the Resource Conservation and Recovery Act. Subsequent flush wastewater is discharged to the lagoon.

8. Storm water runoff from the mixed acid etchants area, buffered oxide etchants area, and stripper solution production areas is collected in tanks and is hauled off site for disposal. The "first flush" of water from certain equipment is stored in RCRA tanks and is hauled off site. All process and storm water from the alum process area is segregated and reused in alum production. The storm water generated from the hydrofluoric acid plant is typically discharged to the Delta Diablo Sanitation District, although it may occasionally be discharged to the lagoon. All process wastewater and process area storm water from the polymer plant is also managed separately. Storm water from ancillary operations associated with the polymer plant is directed to the lagoon.

9. Wastewater is continuously pumped from the lagoon, caustic added, and recirculated back to the lagoon. The Discharger discharges intermittently from the lagoon into Suisun Bay. In general, the Discharger only needs to discharge four to five times a week for 2 to 3 hours per day with a long term average flow rate of 0.31 million gallons per day (mgd) of wastewater via an outfall at a point 200 feet from shore at a depth of about 20 feet (Latitude: 38° 02' 48"N, Longitude: 121° 59' 10"W).

Applicable Plans, Policies and Regulations

Basin Plan

10. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on June 21, 1995. This updated and consolidated plan represents the Board's master water quality control planning document. The State Water Resources Control Board (SWRCB) and the Office of Administrative Law approved the revised Basin Plan on July 20, 1995 and November 13, 1995, respectively. A summary of the regulatory provisions is contained in Title 23 of the California Code of Regulations, Section 3912. The Basin Plan identifies beneficial uses and water quality objectives (WQOs) for waters of the state in the Region, including surface waters and groundwaters. The Basin Plan also identifies discharge prohibitions intended to protect beneficial uses. This Order implements the plans, policies and provisions of the Board's Basin Plan.

Beneficial Uses

11. The beneficial uses identified in the Basin Plan for Suisun Bay in the vicinity of the discharge include:

- Water Contact Recreation
- Non-contact Water Recreation
- Wildlife Habitat
- Preservation of Rare and Endangered Species
- Fish Migration
- Fish Spawning
- Estuarine Habitat
- Industrial Service Supply
- Navigation
- Commercial and Sport Fishing

State Implementation Policy (SIP)

12. The SWRCB adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (also known as the State Implementation Policy or SIP) on March 2, 2000 and the Office of Administrative Law (OAL) approved the SIP on April 28, 2000. By letter dated May 1, 2001, USEPA approved "those portions of the Policy that are subject to USEPA's water quality standard approval authority under section 303(c) of the CWA." The letter indicated that EPA would comment on NPDES permit-related provisions separately. The letter also indicated that the longer TMDL-related compliance schedule provisions continue to be under EPA review. EPA approved Sections 1.1; 1.4.2 (mixing zones and dilution credits); 2 (through 2.2.1) (compliance schedules, except as noted above); 5.2 (site-specific objectives); 5.3 (exceptions) and Appendices 1 and 3. The SIP applies to discharges of toxic pollutants in the inland surface waters, enclosed bays and estuaries of California subject to regulation under the State's Porter-Cologne Water Quality Control Act (Division 7 of the Water Code) and the Federal Clean Water Act. The SIP establishes implementation provisions for priority pollutant criteria promulgated by the USEPA through the National Toxics Rule (NTR) and California Toxics Rule (CTR), and for priority pollutant objectives established by the Regional Water Quality Control Boards (RWQCBs) in their water quality control plans (basin plans). The SIP also establishes monitoring requirements for 2,3,7,8-TCDD equivalents, chronic toxicity control provisions, and Pollutant Minimization Programs.

California Toxics Rule (CTR)

13. On May 18, 2000, the USEPA published the *Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California* (Federal Register, Volume 65, Number 97, 18 May 2000 or the CTR). The CTR specified water quality criteria for numerous pollutants, of which some are applicable to the Discharger's effluent discharge.

Other Regulatory Bases

14. Water quality objectives (WQOs) and effluent limitations in this permit are based on the SIP; the plans, policies and WQOs and criteria of the Basin Plan; California Toxics Rule (Federal Register Volume 65, 97); *Quality Criteria for Water* (EPA 440/5-86-001, 1986 and subsequent amendments, "USEPA Gold Book"); applicable Federal Regulations (40 CFR Parts 122 and 131); the National Toxics Rule (57 FR 60848, 22 December 1992 and 40 CFR Part 131.36(b), "NTR"); NTR Amendment (Federal Register Volume 60, Number 86, 4 May 1995, pages 22229-22237); USEPA December 10, 1998 "*National Recommended Water Quality Criteria*" compilation (Federal Register Vol. 63, No. 237, pp. 68354-68364); and Best Professional Judgment (BPJ) as provided for in the Basin Plan. Where numeric effluent limitations have not been established or updated in the Basin Plan, 40 CFR 122.44(d) specifies that water quality-based effluent limits may be set based on

USEPA criteria and supplemented where necessary by other relevant information to attain and maintain narrative water quality criteria to fully protect designated beneficial uses. Discussion of the specific bases and rationale for effluent limits are given in the associated Fact Sheet for this permit, which is incorporated as part of this Order.

15. In addition to the documents listed above, other USEPA guidance documents upon which BPJ was developed may include in part:

- Region 9 Guidance For NPDES Permit Issuance, February 1994;
- USEPA Technical Support Document for Water Quality-Based Toxics Control (March 1991) (TSD);
- Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria, October 1, 1993;
- Whole Effluent Toxicity (WET) Control Policy, July 1994;
- National Policy Regarding Whole Effluent Toxicity Enforcement, August 14, 1995;
- Clarifications Regarding Flexibility in 40 CFR Part 136 Whole Effluent Toxicity (WET) Test Methods, April 10, 1996;
- Regions 9 & 10 Guidance for Implementing Whole Effluent Toxicity Programs Final, May 31, 1996;
- Draft Whole Effluent Toxicity (WET) Implementation Strategy, February 19, 1997.

Basis for Effluent Limitations

General Basis

16. *Federal Water Pollution Control Act.* Effluent limitations and toxic effluent standards are established pursuant to sections 301 through 305, and 307 of the Federal Water Pollution Control Act and amendments thereto are applicable to the discharges herein.

17. The technology-based limits for conventional pollutants are established in accordance with the Basin Plan and 40 CFR 125.

Applicable Water Quality Objectives

18. The WQOs applicable to the receiving water of this discharge are from the Basin Plan, the CTR, and the NTR.

a. The Basin Plan specifies numeric WQOs for 10 priority toxic pollutants, as well as narrative WQOs for toxicity and bioaccumulation in order to protect beneficial uses. The pollutants for which the Basin Plan specifies numeric objectives are arsenic, cadmium, chromium (VI), copper in freshwater, lead, mercury, nickel, silver, zinc, and cyanide (see also c. below). The narrative toxicity objective states in part "[a]ll waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms". The bioaccumulation objective states in part "[c]ontrollable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life". Effluent limitations and provisions contained in this Order are designed to implement these objectives, based on available information.

b. The CTR specifies numeric aquatic life criteria for 23 priority toxic pollutants and numeric human health criteria for 57 priority toxic pollutants. These criteria apply to inland surface waters and enclosed bays and estuaries such as here, except that where the Basin Plan's Tables 3-3 and 3-4

specify numeric objectives for certain of these priority toxic pollutants, the Basin Plan's numeric objectives apply over the CTR (except in the South Bay south of the Dunbarton Bridge).

c. The NTR established numeric aquatic life criteria for selenium, and numeric aquatic life and human health for cyanide for waters of San Francisco Bay upstream to and including Suisun Bay and the Sacramento-San Joaquin Delta

Basin Plan Receiving Water Salinity Policy

19. The Basin Plan states that the salinity characteristics of the receiving water shall be considered in determining the applicable WQOs. Freshwater objectives apply to discharges to waters both outside the zone of tidal influence and with salinities lower than 5 parts per thousand (ppt) at least 75 percent in a normal water year. Saltwater objectives shall apply to discharges to waters with salinities greater than 5 ppt at least 75 percent in a normal water year. For discharges to waters with salinities in between the two categories or tidally influenced freshwaters that support estuarine beneficial uses, the objectives shall be the lower of the salt or freshwater objectives, based on ambient hardness, for each substance (BP, page 4-13).

CTR Receiving Water Salinity Policy

20. The CTR states that the salinity characteristics (i.e., freshwater vs. saltwater) of the receiving water shall be considered in determining the applicable water quality criteria. Freshwater criteria shall apply to discharges to waters with salinities equal to or less than 1 ppt at least 95 percent of the time. Saltwater criteria shall apply to discharges to waters with salinities equal to or greater than 10 ppt at least 95 percent of the time in a normal water year. For discharges to waters with salinities in between these two categories, or tidally influenced freshwaters that support estuarine beneficial uses, the criteria shall be the lower of the salt or freshwater criteria (the freshwater criteria are calculated based on ambient hardness), for each substance.

Receiving Water Salinity and Hardness

21. a. Salinity

Effluent limitations included in the previous Order were derived from freshwater criteria. The highest salinity level from the San Francisco Regional Monitoring Program (RMP) for the Honker Bay Station for 1998-2000 has been 3.3 ppt. The receiving water, Suisun Bay, is tidally influence and supports estuarine beneficial uses under the definitions included in both the Basin Plan and CTR. Therefore, the effluent limitations specified in this Order for discharges to Suisun Bay are based on the lower of the marine and freshwater WQOs.

b. Hardness

Some WQOs are hardness dependent. Hardness data collected through the RMP are available for water bodies in the San Francisco Bay Region. In determining the WQOs for this Order, the Board used a hardness of 52mg/L, which is the minimum hardness at the Honker Bay Station observed during 1993-2000. This is the closest station to the discharge and represents the best available information for hardness of the receiving water after it has mixed with the discharge.

Technology-Based Effluent Limits

22. This Order includes technology-based limits for the following: Biochemical Oxygen Demand (BOD), total suspended solids (TSS), pH, settleable matter, fluoride. These limits are based on BPJ and are unchanged from the previous Order.

Water Quality-Based Effluent Limitations

23. Toxic substances are regulated by water quality-based effluent limitations (WQBELs) derived from USEPA national water quality criteria listed in the Basin Plan Tables 3-3 and 3-4, the National Toxics Rule, the USEPA Gold Book, the CTR, the SIP, and/or BPJ. WQBELs in this Order are revised and updated from the limits in the previous permit and their presence in this Order is based on the evaluation of the Discharger's data as described below under the Reasonable Potential Analysis. Numeric WQBELs are required for all constituents that have reasonable potential to cause or contribute to an excursion above any State water quality standard. Reasonable potential is determined and final WQBELs are developed using the methodology outlined in the SIP. If the Discharger demonstrates that the final limits will be infeasible to meet and provides justification for a compliance schedule, then interim limits are established, with a compliance schedule to achieve the final limits. Further details about the effluent limitations are given in the associated Fact Sheet, which is incorporated as part of this Order.

Receiving Water Ambient Background Data

24. The discharger has not collected ambient background data for pollutants for which a reasonable potential analysis (RPA) is required. This data gap is addressed by issuance of a technical information request (13267) letter dated August 6, 2001 by Board staff, entitled, Requirement for Monitoring of Pollutants in Effluent and Receiving Water to Implement New Statewide Regulations and Policy. Background data are available for some parameters from the RMP. The receiving waters for the discharge are estuarine and subject to complex tidal and river currents. Data from the Sacramento River Station was chosen to represent ambient background because it is sufficiently upstream of the discharge to be unaffected by the discharge. Therefore, in evaluating reasonable potential, the Board used ambient RMP data from the upstream Sacramento River Station for 1993-2000.

Constituents Identified in the 303(d) List

25. On May 12, 1999, the USEPA approved a revised list of impaired water bodies prepared by the State. The list [hereinafter referred to as the 303(d) list] was prepared in accordance with Section 303(d) of the federal Clean Water Act to identify specific water bodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations on point sources. The USEPA approved the State's 303(d) list and added dioxins, furans, dioxin-like polychlorinated biphenyls (PCBs), dieldrin, chlordane, and 4,4'-DDT to it. California's current 303(d) list includes Suisun Bay, listed as impaired by:

- copper,
- mercury,
- nickel,
- selenium,
- dioxin compounds,
- furan compounds,
- chlordane,
- 4,4'-DDT,
- diazinon,
- dieldrin, and
- PCBs.

The extent to which the Discharger is contributing to downstream impairment in Suisun Bay has to be evaluated on a pollutant-by-pollutant basis during the development of the Total Maximum Daily

Loads (TMDLs) for the Bay. In addition, the Discharger's contribution and/or Waste Load Allocation (WLA) will be characterized further as TMDLs are developed for the Bay.

26. In response to the State Board's Order No.2001-06, staff has evaluated the assimilative capacity of the receiving water for 303(d) listed pollutants for which the Discharger has reasonable potential in its discharge. The evaluation included a review of RMP data (local and Sacramento River stations), effluent data, and WQOs. From this evaluation, staff has found that the assimilative capacity is highly variable due to the complex hydrology of the receiving water. Therefore, there is uncertainty associated with the representative nature of the appropriate ambient background data to conclusively quantify the assimilative capacity of the receiving water. Pursuant to Section 1.4.2.1 of the SIP, "dilution credit may be limited or denied on a pollutant-by-pollutant basis..."

a. For certain bioaccumulative pollutants, based on BPJ, dilution credit is not included in calculating the final WQBELs. This determination will be based on available data on concentrations of these pollutants in aquatic organisms, sediment, and the water column. At the present time, dilution credit is not included for the following pollutants: mercury, dieldrin, 4,4'-DDE, dioxins and furans, PCBs, Chlordane, and selenium. Primarily, this determination is based on San Francisco Bay fish tissue data that show these pollutants, except selenium, exceed screening levels. The fish tissue data are contained in "Contaminant Concentrations in Fish from San Francisco Bay 1997" May 1997. Denial of dilution credits for these pollutants is further justified by fish advisories to the San Francisco Bay. The office of Environmental Health and Hazard Assessment (OEHHA) performed a preliminary review of the data from the 1994 San Francisco Bay pilot study, "Contaminated Levels in Fish Tissue from San Francisco Bay." The results of the study showed elevated levels of chemical contaminants in the fish tissues. Based on these results, OEHHA issued an interim consumption advisory covering certain fish species from the bay in December, 1994. This interim consumption advice was issued and is still in effect due to health concerns based on exposure to sport fish from the bay contaminated with mercury, polychlorinated biphenyls (PCBs), dioxins, and pesticides (e.g., DDT). For selenium, the denial of dilution credits is based on Bay waterfowl tissue data presented in the California Department of Fish and Game's Selenium Verification Study (1986-1990). These data show elevated levels of selenium in the livers of waterfowl that feed on bottom dwelling organisms such as clams. Additionally, in 1987 the Office of Environmental Health Hazard Assessment issued an advisory for the consumption of two species of diving ducks in the north bay found to have high tissue levels of selenium. All these factors suggest that there is no more assimilative capacity in the Bay for these pollutants. Based on these data, the Board placed selenium, mercury, and PCBs on the CWA Section 303(d) list. The USEPA added dioxins and furans compounds, dieldrin, Chlordane, and 4,4'-DDT on the CWA Section 303(d) list.

b. Furthermore, Section 2.1.1 of the SIP states that for bioaccumulative compounds on the 303(d) list, the Board should consider whether mass-loading limits should be limited to current levels. The Board finds that mass loading limits are warranted for certain bioaccumulative compounds on the 303(d) list for the receiving waters of this discharge. This is to ensure that this discharge does not contribute further to impairment of the narrative objective for bioaccumulation.

c. For non-bioaccumulative constituents, it is assumed that there is assimilative capacity based on BPJ, and a conservative allowance of 10:1 dilution is granted. This based on the SIP, which allows the Board to further limit dilution credits.

Total Maximum Daily Loads (TMDLs) and Waste Load Allocations (WLAs)

27. Based on the 303(d) list of pollutants impairing Suisun Bay, the Board plans to adopt TMDLs for these pollutants no later than 2010, with the exception of dioxin and furan compounds. The Board

defers development of the TMDL for dioxin and furan compounds to the USEPA. Future review of the 303(d) list for Suisun Bay may result in revision of the schedules and/or provide schedules for other pollutants.

28. The TMDLs will establish WLAs for point sources and load allocations for non-point sources, and will result in achieving the water quality standards for the water body. Depending upon whether the Discharger is found to be impacting water quality in Suisun Bay, the TMDLs may include WLAs for the Discharger. If the TMDLs address the Discharger, the final effluent limitations would be based on the applicable WLAs.

29. *Compliance Schedules*. Pursuant to Section 2.1.1 of the SIP, "the compliance schedule provisions for the development and adoption of a TMDL only apply when: (a) the discharger requests and demonstrates that it is infeasible for the discharger to achieve immediate compliance with a CTR criterion; and (b) the discharger has made appropriate commitments to support and expedite the development of the TMDL. In determining appropriate commitments, the RWQCB should consider the discharger's contribution to current loadings and the discharger's ability to participate in TMDL development."

30. The following summarizes the Board's strategy to collect water quality data and to develop TMDLs:
    a. Data collection – The Board has given the dischargers the option to collectively assist in developing and implementing analytical techniques capable of detecting 303(d)-listed pollutants to at least their respective levels of concern or water quality objectives. The Board will require dischargers to characterize the pollutant loads from their facilities into the water quality-limited water bodies. The results will be used in the development of TMDLs, but may also be used to update/revise the 303(d) list and/or change the WQOs for the impaired water bodies including Suisun Bay.

    b. Funding mechanism – The Board has received, and anticipates continued receipt of, resources from federal and state agencies for the development of TMDLs. To ensure timely development of TMDLs, the Board intends to supplement these resources by allocating development costs among dischargers through the RMP or other appropriate funding mechanisms.

Interim Limits and Compliance Schedules

31. Until final WQBELs or WLAs are adopted, state and federal anti-backsliding and antidegradation policies, and the SIP, require that the Board include interim effluent limitations. The interim effluent limitations will be the lower of the following for all constituents:
    - Current performance; or
    - Previous order's limits.

Where pollutants have existing high detection limits, interim concentration limits are not established because meaningful performance-based concentration limits cannot be calculated for pollutants with non-detectable concentrations. However, the Discharger has the option to investigate alternative analytical procedures that result in lower detection limits, either through participation in new RMP special studies or through equivalent studies conducted jointly with other dischargers. The pollutants that require interim limits are first determined from the RPA and a comparison of current performance and the previous order's limits. Interim limitations are then calculated statistically from the effluent data. Performance-based effluent limits are typically set equal to the sum of the average and three times the standard deviation of the detected data. However, if there are insufficient detected data to conduct a statistically valid performance analysis (i.e., less than 10 detected values), the

interim limit is set equal to the previous order's limits. If there is no previous limit, development of interim limits is deferred until additional data collection is complete.

32. Compliance schedules are established based on Section 2.2 of the SIP for limits derived from CTR criteria or based on the Basin Plan for limits derived from the Basin Plan WQOs. If an existing discharger cannot immediately comply with a new and more stringent effluent limitation, the SIP and the Basin Plan authorize a compliance schedule in the permit. To qualify for a compliance schedule, both the SIP and the Basin Plan require that the discharger demonstrate that it is infeasible to achieve immediate compliance with the new limit. The SIP and Basin Plan require that the following information be submitted to the Board to support a finding of infeasibility:
    i. Documentation that diligent efforts have been made to quantify pollutant levels in the discharge and sources of the pollutant in the waste stream, including the results of those efforts;
    ii. Documentation of source control and/or pollution minimization efforts currently under way or completed;
    iii. A proposed schedule for additional or future source control measures, pollutant minimization or waste treatment; and
    iv. A demonstration that the proposed schedule is as short as practicable.

33. In reports dated May 1 and 2, 2002, the Discharger demonstrated infeasibility to meet the WQBELs calculated according to Section 1.4 of the SIP for copper, lead, mercury, nickel, selenium, and cyanide. This demonstration complies with the infeasibility requirements in Section 2.1 of the SIP. This Order establishes compliance schedules for these pollutants that extend beyond 1 year. Pursuant to the SIP, and 40 CFR 122.47, the Board shall establish interim numeric limitations and interim requirements to control the pollutants. Except as authorized in the SIP and discussed elsewhere in this Order, this Order establishes interim limits for these pollutants based on the previous permit limits. Specific basis for these interim limits are described in the following findings for each pollutant. This Order also establishes interim requirements in a provision for development and/or improvement of a Pollution Prevention Program to reduce pollutant loadings to the lagoon, and for submittal of annual reports on this Program.

Antidegradation and Anti-backsliding

34. The interim limits in this permit are in compliance with antidegradation because the interim limits hold the Discharger to current facility performance, and the final limits comply with anti-backsliding requirements.

Specific Basis

Reasonable Potential Analysis

35. As specified in 40 CFR 122.44(d)(1)(i), permits are required to include WQBELs for all pollutants "which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard." Using the method prescribed in Section 1.3 of the SIP, Board staff has analyzed the effluent data to determine if the discharge, which is the subject of this Order, has a reasonable potential to cause or contribute to an excursion above a State water quality standard ("Reasonable Potential Analysis" or "RPA"). For all parameters that have reasonable potential, numeric WQBELs are required. The RPA compares the effluent data with numeric and narrative WQOs in the Basin Plan and numeric WQOs from the US EPA Gold Book, the NTR, and the CTR.

36. *RPA Methodology*. The method for determining reasonable potential involves identifying the observed maximum pollutant concentration in the effluent (MEC) for each constituent, based on

effluent concentration data. The RPA for all constituents is based on zero dilution, according to section 1.3 of the SIP. There are three triggers in determining reasonable potential.

a. The first trigger is activated when MEC is greater than the lowest applicable WQO, which has been adjusted for pH, hardness, and translator data, if appropriate. An MEC that is greater than the (adjusted) WQO means that there is reasonable potential for that constituent to cause or contribute to an excursion above the WQO and a WQBEL is required. (Is the MEC>WQO?)
b. The second trigger is activated if observed maximum ambient background concentration (B) is greater than the adjusted WQO and the MEC is less than the adjusted WQO or the pollutant was not detected in any of the effluent samples and all of the detection levels are greater than or equal to the adjusted WQO. If B is greater than the adjusted WQO, then a WQBEL is required. (Is B>WQO?)
c. The third trigger is activated after a review of other information determines that a WQBEL is required even though both MEC and B are less than the WQO. A limit is only required under certain circumstances to protect beneficial uses.

37. *Summary of RPA Data and Results.* The RPA was based on effluent monitoring data from January 1999 through December 2001 for metals, cyanide, selenium and organic toxic pollutants. Based on the RPA methodology described above and in the SIP, the following constituents have been found to have reasonable potential to cause or contribute to an excursion above WQOs: arsenic, copper, lead, mercury, nickel, selenium, cyanide, 4,4'-DDE, and dieldrin. Based on the RPA, numeric WQBELs are required for these constituents.

38. *RPA Determinations*. The MEC, WQOs, bases for the WQOs, background concentrations used and reasonable potential conclusions from the RPA are listed in Table 1 for all constituents analyzed. The RPA results for most of the constituents in the CTR (Nos. 1, 3, 5a, 12, 17-126 except 111) were not able to be determined because of the lack of background data, an objective/criterion, or effluent data. (Further details on the RPA can be found in the Fact Sheet.)

Table 1. Reasonable Potential Analysis (RPA) Results

Constituent[1]	WQO/ WQC (µg/L)	Basis[2]	MEC (µg/L)	Maximum Ambient Background Conc. (µg/L)	Reasonable Potential
Arsenic	36	BP, sw	110	3.7	Yes
Cadmium	0.70	BP, fw, H=52	<2	0.06	No[3]
Chromium (VI)	11	BP, fw	<5	Not available	No[3]
Copper*	3.7	CTR, sw, T=0.83[4]	14	9.9	Yes
Lead	1.4	BP, fw, H=52	15	2.4	Yes
Mercury*	0.025	BP, sw	1.5	0.038	Yes
Nickel*	7.1	BP, sw	6	21.8	Yes
Selenium*	5.0	NTR, fw	8	0.3	Yes
Silver	2.3	BP, sw	<5	0.057	No[3]
Zinc	58	BP, fw, H=52	54	18.2	No
Cyanide	1.0	NTR, sw	10	Not available	Yes
TCDD TEQ*	$1.4x10^{-8}$	CTR (#16), BP narrative	$<2.26x10^{-6}$	NA	Undetermined[5]
4,4'-DDE	0.00059	CTR (#109), hh	<0.08	0.00092	Yes
Dieldrin*	0.00014	CTR (#111), hh	<0.06	0.0004	Yes

Constituent[1]	WQO/ WQC (µg/L)	Basis[2]	MEC (µg/L)	Maximum Ambient Background Conc. (µg/L)	Reasonable Potential
CTR #s 1, 3, 5a, 12, 17-126 except 109&111	Various or NA	CTR	Non-detect, less than WQO, NA, or no WQO	Not available	No or Undetermined[6]

1. * = Constituents on 303(d) list; TCDD TEQ applies to the toxicity equivalents of the 17 dioxin and furan congeners of 2,3,7,8-TCDD using the 1998 WHO Toxicity Equivalent Factors.
2. RPA based on the following: Hardness (H) is based on the lowest ambient hardness, 52 in mg/L as $CaCO_3$; BP = Basin Plan; CTR = California Toxics Rule; NTR=National Toxics Rule; fw = freshwater; sw = saltwater; hh = human health; T = translator to convert dissolved to total copper.
3. Order WQ 2001-16 Napa Sanitation Remand states that no reasonable potential should be concluded if all of the following conditions are satisfied (1) all data are non-detects, (2) background levels are below the objective or no background data available, and (3) there is no additional information in the record supporting the need for a limit.
4. Translators are based on the CTR.
5. Undetermined due to lack effluent data. Although the facility reported one non-detected value for 2,3,7,8-TCDD in September 2000 as shown in the Table, Staff have determined that additional monitoring for this parameter as well as the other dioxins and furans that contribute to a lesser extent to TEQ is warranted to make a conclusive determination of RP.
6. Undetermined due to lack of background data, lack of objectives/criteria, or lack of effluent data (See Fact Sheet Table for full RPA results).

39. *RPA Results for Impairing Pollutants.* While TMDLs and WLAs are being developed, interim concentration limits are established in this permit for 303(d) listed pollutants that have reasonable potential to cause or contribute to an excursion above the water quality standard. In addition, mass limits are established for bioaccumulative 303(d) listed pollutants that can be reliably detected. Constituents on the 303(d) list which the RPA determined a need for effluent limitations are copper, mercury, nickel, selenium, 4,4'-DDE, and dieldrin. Final determination of RP for other constituents identified on the 303(d) list could not be performed due to lack of available effluent data, lack of background data or lack of an established WQO or criterion.

Interim Limits with Compliance Schedules

40. The Discharger has demonstrated infeasibility to meet the WQBELs calculated according to Section 1.4 of the SIP for copper, lead, mercury, nickel, and selenium. Therefore, this Order establishes compliance schedules for these pollutants. For limits based on CTR or NTR criteria (e.g., copper, selenium, and cyanide), this Order establishes a 5-year compliance schedule as allowed by the CTR and SIP. For limits based on the Basin Plan numeric objectives (e.g., lead, mercury, and nickel), this Order establishes compliance schedules until March 31, 2010. For cyanide, there is insufficient background data to calculate a true WQBEL, so this Order specifies a data collection period until May 18, 2003.

41. No interim performance-based limits were included in this Order because sufficient data were not available to perform a meaningful statistical analysis of facility performance. Interim concentration effluent limits were included in this Order for lead, mercury, and nickel based on the previous permit limits. There are no previous permit limits for copper, selenium, and cyanide. Development of interim limits for these parameters is deferred until additional effluent data are collected as described

in Findings 65 and 66. Interim, performance-based, mass effluent limitations are established for mercury, as discussed in Finding 51 below.

Specific Pollutants

42. *Dioxin and Furans.*

a. The CTR establishes a numeric human health WQC of 0.14 picograms per liter (pg/L) for 2,3,7,8-tetrachlorinated dibenzo-p-dioxin (2,3,7,8-TCDD) based on consumption of aquatic organisms.

b. The preamble of the CTR states that California NPDES permits should use toxicity equivalents (TEQs) where dioxin-like compounds have reasonable potential with respect to narrative criteria. The preamble further states that USEPA intends to use the 1998 World Health Organization Toxicity Equivalence Factor (TEF)[1] scheme in the future and encourages California to use this scheme in State programs. Additionally, the CTR preamble states USEPA's intent to adopt revised water quality criteria guidance subsequent to their health reassessment for dioxin-like compounds.

c. The SIP applies to all toxic pollutants, including dioxins and furans. The SIP requires a limit for 2,3,7,8-TCDD if a limit is necessary, and requires monitoring for a minimum of 3 years by all major NPDES dischargers for the other 16 dioxin and furan compounds.

d. The Basin Plan contains a narrative WQO for bio-accumulative substances: "Many pollutants can accumulate on particulates, in sediments, or bio-accumulate in fish and other aquatic organisms. Controllable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life. Effects on aquatic organisms, wildlife, and human health will be considered" (BP, page 3-2). This narrative WQO applies to dioxin and furan compounds, based in part on the scientific community's consensus that these compounds associate with particulates, accumulate in sediments, and bioaccumulate in the fatty tissue of fish and other organisms.

e. The USEPA's 303(d) listing determined that the narrative objective for bioaccumulative pollutants was not met because of the levels of dioxins and furans in the fish tissue.

f. The Discharger has limited data (one non-detect value) for 2,3,7,8-TCDD dioxins and no data for the other dioxins and furans. Therefore, it not feasible to conduct an RPA or calculate interim limits. Pursuant to the SIP, the Discharger will be required to monitor for dioxins and furans. Once there is enough information, an RPA will be conducted to determine if limits are required.

43. *4,4'-DDE, and Dieldrin.* Board staff could not determine MECs for 4,4'-DDE and dieldrin because they were not detected in the effluent, and all of the detection limits were reported higher than the WQO (Section 1.3 of the SIP). Board staff conducted the RPA by comparing the WQO with RMP ambient background concentration data gathered using research-based sample collection, concentration, and analytical methods. The RPA indicates that 4,4'-DDE and dieldrin have reasonable potential, and numeric WQBELs are required.

[1] The 1998 WHO scheme includes TEFs for dioxin-like PCBs. Since dioxin-like PCBs are already included within "Total PCBs", for which the CTR has established a specific standard, dioxin-like PCBs are not included in this Order's version of the TEF scheme.

44. The current 303(d) list includes Suisun Bay as impaired for 4,4'-DDT and dieldrin. 4,4'-DDE is a breakdown compound of 4,4'-DDT. The Board intends to develop a TMDL that will lead towards overall reduction of 4,4'-DDT and dieldrin loadings. The WQBELs specified in this Order may be changed to reflect the WLAs from this TMDL. Studies are ongoing to investigate the feasibility and reliability of different methods of increasing sample volumes to lower the detection limit for pesticides. If analytical methodologies improve and the detection levels decrease to a point that show discharge concentrations above the limit in this Order, the Board will re-evaluate the Discharger's feasibility to comply with the limits and determine the need for a compliance schedule and interim performance limits at that time. Since 4,4'-DDT and dieldrin are bioaccumulative and on the 303(d) list due to fish tissue concentrations, there is no assimilative capacity, and no dilution credit was allowed in the final limit calculations for 4,4'-DDE and dieldrin.

45. *Other organics.* The Discharger has performed organics sampling only once (in 2000). This sampling effort included many of the organic constituents listed in the CTR. The data were used to perform the RPA for organic pollutants. The full RPA is presented in the Fact Sheet. In most cases other than 4,4'-DDE and dieldrin, reasonable potential cannot be determined because detection limits are higher than the lowest WQOs and/or ambient background concentrations are not available. The Discharger will continue to monitor for these constituents in the effluent and the receiving water, with the option of using analytical methods that provide the best feasible detection limits. When sufficient data are available, a reasonable potential analysis will be conducted to determine whether to add numeric effluent limitations to the Order or to continue monitoring.

46. *Effluent RP Monitoring.* This Order does not include effluent limitations for constituents that do not show a reasonable potential, but continued monitoring for them is required as described in the Self-Monitoring Program (SMP). If concentrations of these constituents increase significantly, the Discharger will be required to investigate the source of the increases and establish remedial measures if the increases result in a reasonable potential to cause or contribute to an excursion above the applicable water quality standard.

47. *Permit Reopener.* The Order includes a reopener provision to allow numeric effluent limitations to be added or deleted in the future for any constituent that exhibits or does not exhibit, respectively, reasonable potential. The Board will make this determination based on monitoring results.

Development of Effluent Limitations

48. Arsenic

a. *Arsenic Water Quality Objectives.* Both the Basin Plan and CTR include objectives that govern arsenic in the receiving water. The Basin Plan specifies objectives for the protection of aquatic life of 36 µg/L as 4-day average and 69 µg/L as 1-hour average.

b. *Arsenic Effluent Limitations.* Order 96-032 deleted effluent limits for arsenic, based on evaluation of self-monitoring data from 1990 to 1995. Board staff determined that the discharge concentrations of arsenic were not at levels of concern at that time. Based on the reasonable potential analysis as required by Section 1.3 of the SIP, arsenic was found to have reasonable potential to cause or contribute to an excursion above WQOs. The calculated WQBELs for arsenic are: AMEL of 260 µg/L and MDEL of 530 µg/L.

c. *Treatment Plant Performance and Compliance Attainability for Arsenic.* Effluent arsenic concentrations during 1999-2001 range from 37 µg/L to 110 µg/L (8 samples). Therefore, the

Discharger has shown the ability to comply with final effluent limitations and no interim limitations are necessary.

49. Copper

a. *Copper Water Quality Objectives.* The saltwater criteria for copper in the adopted CTR are 3.1 µg/L for chronic protection and 4.8 µg/L for acute protection. Included in the CTR are translator values to convert the dissolved criteria to total criteria. The Discharger may also perform a translator study to determine a more site-specific translator. The SIP, Section 1.4.1, and the June 1996 EPA guidance document, entitled *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion,* describe this process and provide guidance on how to establish a site-specific translator. Using the CTR translator, translated criteria of 3.7 µg/L for chronic protection and 5.8 µg/L for acute protection were used to calculate effluent limitations.

b. *Water Effects Ratios.* The CTR provides for adjusting the criteria by deriving site-specific objectives (SSOs) through application of the water-effect ratio (WER) procedure. The USEPA includes WERs to assure that the metal criteria are appropriate for the chemical conditions under which they are applied. A WER accounts for differences between a metal's toxicity in laboratory dilution water and its toxicity in water at the site. The USEPA's February 22, 1994 *Interim Guidance on Determination and Use of Water Effects Ratios for Metals* superseded all prior USEPA guidance on this subject. If the Discharger decides to pursue SSOs, they shall be developed in accordance with procedures contained in Section 5.2 of the SIP.

c. *Copper Effluent Limitations.* Based on the RPA, there is reasonable potential for exceedances of the WQOs for copper in the subject discharge. The final WQBEL for copper will be based on the WLA contained in a TMDL. Alternatively, the copper WQBEL may be developed consistent with SIP procedures in Section 5.2 if the impairment studies support adoption of an SSO. If the 303(d) listing process in 2002 concludes that Suisan Bay is not impaired by copper, then a de-listing of the Bay for copper will result. Interim effluent limitations are required for copper since the Discharger has demonstrated that the calculated WQBELs presented in the Fact Sheet as a point of reference (AMEL of 2.4 µg/L and MDEL of 5.8 µg/L) will be infeasible to meet. Effluent data from 1999-2001 was considered to develop interim concentration-based effluent limitations. The limited data (seven detected values of 12 samples) preclude any meaningful evaluation of current treatment performance for this parameter. The previous permit does not include a copper effluent limit. As discussed in Findings 73 and 74, the Discharger will collect additional effluent data, as required by the August 6, 2001 letter from the Board to all permittees. For most parameters, monthly monitoring is required. For copper, the Board is specifically requiring twice per month monitoring for one year which is beyond the minimum provisions of the August 6, 2001 letter. This will provide sufficient data for the Board to evaluate treatment performance and develop interim limits, as necessary. The permit will be re-opened to include such interim limitations when established.

c. *Treatment Plant Performance and Compliance Attainability for Copper.* Effluent copper concentrations from 1999-2001 range from <5 µg/L to 14 µg/L (12 samples).

50. Lead

a. *Lead Water Quality Objectives.* Both the Basin Plan and CTR include objectives that govern lead in the receiving water. The Basin Plan specifies objectives for the protection of aquatic life of 1.44 µg/L as 4-day average and 35.5 µg/L as 1-hour average.

b. *Lead Effluent Limitations.* This Order contains lead WQBELs because, based on the RPA, there is reasonable potential for exceedances of the WQO for lead in the subject discharge. Interim effluent limitations are required for lead since the Discharger has demonstrated that the calculated WQBELS presented in the Fact Sheet as a point of reference (AMEL of 1.2 µg/L and MDEL of 2.3 µg/L) will be infeasible to meet. Effluent data from 1999-2001 was considered in developing an interim concentration-based effluent limitation. The limited data (four detected values of 10 samples) preclude any meaningful evaluation of current treatment performance for this parameter. Therefore, the maximum daily effluent limit of 56 µg/L from the previous permit will serve as the interim limit.

c. *Treatment Plant Performance and Compliance Attainability.* Effluent lead concentrations from 1999-2001 range from <5 µg/L to 15 µg/L (10 samples).

51. Mercury

a. *Mercury Water Quality Objectives.* Both the Basin Plan and CTR include objectives that govern mercury in the receiving water. The Basin Plan specifies objectives for the protection of aquatic life of 0.025 µg/L as 4-day average and 2.1 µg/L as 1-hour average. The CTR specifies a long-term average criterion for protection of human health of 0.051 µg/L.

b. *Mercury TMDL.* The current 303(d) list includes Suisun Bay as impaired by mercury. Methyl-mercury is a persistent bioaccumulative pollutant. The Board intends to establish a TMDL that will lead towards overall reduction of mercury mass loadings into Suisun Bay. If the Discharger is found to be contributing to mercury impairment in Suisun Bay, the final mercury effluent limitations will be based on the Discharger's WLA in the TMDL, and the permit will be revised to include the final WQBEL as an enforceable limitation.

c. *Mercury Control Strategy.* Board staff is developing a TMDL to control mercury levels in Suisun Bay. The Board, together with other stakeholders, will cooperatively develop source control strategies as part of TMDL development. The currently preferred strategy is to apply interim mass loading limits to point source discharges while focusing mass reduction efforts on other more significant and controllable sources. While the TMDL is being developed, the Discharger will cooperate in maintaining ambient receiving water conditions by complying with the performance-based mercury mass emission limit. Therefore, this Order includes interim concentration and mass loading effluent limitations for mercury, as described in the findings below. The Discharger is required to implement source control measures as also described below.

d. *Concentration-Based Mercury Effluent Limitation.* Based on the RPA, there is reasonable potential for exceedances of the WQO for mercury in the subject discharge. The final WQBELs for mercury will be based on the WLA contained in a TMDL. Effluent data from 1999-2001 was considered in developing an interim concentration-based effluent limitation. The limited data (six detected values of 12 samples) preclude any meaningful evaluation of current treatment performance for mercury. Therefore, the maximum daily effluent limit of 1.0 µg/L from the previous permit will serve as the interim limit.

e. *Mass-Based Mercury Effluent Limitation.* This Order establishes an interim mercury mass-based effluent limitation of 0.021 kilograms per month. To calculate mass-based interim limitations, the Staff generally perform a statistical analysis on both effluent flow and mercury concentration data to determine current mass loadings. However, the limited detected values

preclude any statistical analysis of the concentration data. The interim limitation included in this Order is calculated based the 99th percentile effluent flow for 2000 and 2001, and the maximum effluent concentration from 1998-2001. The mass-based effluent limitation maintains current loadings until a TMDL is established and is consistent with state and federal antidegradation and anti-backsliding requirements. The final mass-based effluent limitation may be based on the WLA derived from the mercury TMDL.

f. *Treatment Plant Performance and Compliance Attainability.* Effluent concentrations from 1999-2001 range from <0.2 to 1.5 µg/L.

g. *Mercury Source Control.* This Order requires the Discharger to implement pollution prevention and source control programs to maximize practicable control over influent mercury sources.

52. Nickel

a. *Nickel Water Quality Objectives.* The Basin Plan contains a numeric WQO for nickel for protection of aquatic life of 7.1 µg/L as 24-hour average and 140 µg/L as instantaneous maximum.

b. *Nickel Effluent Limitations.* Based on the RPA, there is reasonable potential for exceedances of the WQO for nickel in the subject discharge. The final WQBEL for nickel will be based on the WLA contained in a TMDL, if developed. Interim effluent limitations are required for nickel since the Discharger has demonstrated that the calculated WQBELS presented in the Fact Sheet as a point of reference (AMEL of 5.8 µg/L and MDEL of 12 µg/L) will be infeasible to meet. Effluent data from 1999-2001 was considered in developing an interim concentration-based effluent limitation. The limited data (three detected values of 8 samples) preclude any meaningful evaluation of current treatment performance for this parameter. Therefore, the maximum daily effluent limit of 71 µg/L from the previous permit will serve as the interim limit.

c. *Treatment Plant Performance and Compliance Attainability.* Effluent nickel concentrations during 1999-2001 range from <5 µg/L to 6 µg/L.

53. Selenium

a. *Selenium Water Quality Objectives.* Criteria were promulgated in the NTR for specific waters, which include Suisun Bay. A freshwater Criterion Chronic Concentration (CCC) for the protection of aquatic life of 5 µg/L and a freshwater Criterion Maximum Concentration (CMC) for the protection of aquatic life of 20 µg/L were promulgated in the NTR.

b. *Selenium Effluent Limitations.* Based on the RPA, there is reasonable potential for exceedances of the WQO for selenium in the subject discharge. The final WQBEL for selenium will be based on the WLA contained in a TMDL, if developed. Interim effluent limitations are required for selenium since the Discharger has demonstrated that the calculated WQBELS presented in the Fact Sheet as a point of reference (AMEL of 4.1 µg/L and MDEL of 8.2 µg/L) will be infeasible to meet. Effluent data from 1999-2001 was considered to develop interim concentration-based effluent limitations. The limited data (one detected value) preclude any meaningful evaluation of current treatment performance for this parameter. The previous permit does not include a selenium effluent limit. As discussed in Findings 73 and 74, the Discharger will collect additional effluent data, as required by the August 6, 2001 letter from the Board to all permittees. For most parameters, monthly monitoring is required. For selenium, the Board is specifically requiring twice per month monitoring for one year which is beyond the minimum provisions of

the August 6, 2001 letter. This will provide sufficient data for the Board to evaluate treatment performance and develop interim limits, as necessary. The permit will be re-opened to include such interim limitations when established.

c. *Treatment Plant Performance and Compliance Attainability.* There was only one sample analyzed for selenium during 1998-2001 (8 µg/L).

54. Cyanide

a. *Cyanide Water Quality Objectives.* The NTR specifies freshwater criteria of 5.2 µg/L for CMC and 22 µg/L as CCC, and saltwater CMC and CCC of 1 µg/L. This CCC value is below the presently achievable reporting limits (all samples with a detection limit of 10 µg/L).

b. *Cyanide Effluent Limitations.* Order 96-032 deleted effluent limits for cyanide, based on evaluation of self-monitoring data from 1990 to 1995. Board Staff determined that the discharge concentrations of cyanide were not at levels of concern at that time. Based on the RPA, cyanide was found to have reasonable potential to cause or contribute to an excursion above WQOs.

Cyanide is a regional problem associated with the analytical protocol for cyanide analysis due to matrix interferences. A body of evidence exists to show that cyanide measurements in effluent may be an artifact of the analytical method. This question is being explored in a national research study sponsored by the Water Environment Research Foundation (WERF).

A regional discharger-funded study is underway for development of updated water quality objectives for cyanide. The cyanide study plan was submitted on October 29, 2001. The final report is to be submitted to the Board by June 30, 2003. There are also no background data currently available from either the Sacramento River or Honker Bay Stations. Ambient cyanide data are being collected as required by the August 6, 2001 letter. The final WQBEL will be recalculated based on additional ambient background information, and/or an updated objective for cyanide. If the Discharger requests and demonstrates that it is infeasible to comply with the final limit, the permit revision will establish a maximum five-year compliance schedule. Effluent data from 1999-2001 was considered to develop interim concentration-based effluent limitations. The limited data (one detected value) preclude any meaningful evaluation of current treatment performance for this parameter. The previous permit does not include a cyanide effluent limit. As discussed in Findings 73 and 74, the Discharger will collect additional effluent data, as required by the August 6, 2001 letter from the Board to all permittees. For most parameters including cyanide, monthly monitoring is required. This will provide sufficient data for the Board to evaluate treatment performance and develop interim limits, as necessary. The permit will be re-opened to include such interim limitations when established. .

c. *Treatment Plant Performance and Compliance Attainability.* Effluent cyanide concentrations during 1999-2001 range from <10 µg/L to 10 µg/L.

55. 4,4'-DDE

a. *Water Quality Objectives.* In the CTR, the lowest criterion for 4,4'-DDE is the human health value of 0.00059 µg/L. The criterion is well below the Minimum Level (ML) of 0.05 µg/L, identified in Appendix 4 of the SIP.

b. *4,4'-DDE Effluent Limitation.* This Order contains 4,4'-DDE WQBELs because the 1998 303(d) list includes Suisan Bay as impaired by 4,4'-DDT (4,4'-DDE is a breakdown compound of 4,4'-

DDT), and because, based on the RPA, there is reasonable potential for exceedances of the WQO for 4,4'-DDE. The Board intends to establish a TMDL that will lead towards overall reduction of 4,4'-DDT mass loadings into Suisun Bay. If the Discharger is found to be contributing to 4,4'-DDE impairment in Suisun Bay, the final 4,4'-DDE effluent limitations will be based on the Discharger's WLA in the TMDL. 4,4'-DDE is bioaccumulative and 4,4'-DDT is on the 303(d) list because of fish tissue concentrations. Therefore, there is no assimilative capacity and no dilution credit was allowed in the final limit calculations. Compliance will be demonstrated by showing no detection below the SIP ML (0.05 µg/L).

c. *Plant Performance.* Effluent data for 4,4'-DDE consist of one sample, <0.08 µg/L. Because 4,4'-DDE has not been detected in the effluent and there are no known sources of 4,4'-DDE at the Discharger's facility, this Order includes the final effluent limitations for 4,4'-DDE and no interim limit is necessary.

56. Dieldrin

a. *Water Quality Objectives.* In the CTR, the lowest criterion for dieldrin is the human health value of 0.00014 µg/L. The criterion is well below the Minimum Level (ML) of 0.01 µg/L, identified in Appendix 4 of the SIP.

b. *Dieldrin Effluent Limitation.* This Order contains dieldrin WQBELs because the 1998 303(d) list includes Suisan Bay as impaired by dieldrin, and because, based on the RPA, there is reasonable potential for exceedances of the WQO for dieldrin. The Board intends to establish a TMDL that will lead towards overall reduction of dieldrin mass loadings into Suisun Bay. If the Discharger is found to be contributing to dieldrin impairment in Suisun Bay, the final dieldrin effluent limitations will be based on the Discharger's WLA in the TMDL. Dieldrin is bioaccumulative and on the 303(d) list because of fish tissue concentrations. Therefore, there is no assimilative capacity and no dilution credit were allowed in the final limit calculations. Compliance will be demonstrated by showing no detection below the SIP ML (0.01 µg/L).

c. *Plant Performance.* Effluent data for dieldrin consist of one sample, <0.06 µg/L. Because dieldrin has not been detected in the effluent and there are no known sources of dieldrin at the operator's facility, this Order includes the final effluent limitations for dieldrin and no interim limit is necessary.

Whole Effluent Acute Toxicity

57. This Order includes effluent limits for whole effluent acute toxicity. Compliance evaluation is based on 96-hour static renewal bioassays because this is an intermittent discharge. USEPA promulgated updated test methods for acute and chronic toxicity bioassays on October 16, 1995, in 40 CFR Part 136. Dischargers have identified several practical and technical issues that need to be resolved before implementing the new procedures, referred to as the 4th Edition. The primary unresolved issue is the use of younger, possibly more sensitive fish, which may necessitate a reevaluation of permit limits. SWRCB staff recommended to the Boards that new or renewed permit holders be allowed a time period in which laboratories can become proficient in conducting the new tests. A provision is included in this Order granting the Discharger 12 months to implement the new test method. In the interim, the Discharger may continue using the current test protocols. In accordance with the toxicity testing requirements established in Order 96-032, the Discharger has conducted toxicity testing using stickleback and rainbow trout. Monthly toxicity testing data collected in 2001 indicate that for the stickleback species, the 90th percentile values were above 80 percent survival, and the 11 sample median values were above 95 percent survival. Rainbow trout test results indicate for the 90th

percentile, all samples were at 95 percent survival. Similarly, all values for the 11 sample median test were at 100 percent survival. Based on these data, the Discharger has been in compliance with acute toxicity effluent limitations.

Whole Effluent Chronic Toxicity

58. *Program History.* The Basin Plan contains a narrative toxicity objective stating that "All waters shall be maintained free of toxic substances in concentrations that are lethal to or produce other detrimental responses to aquatic organisms" and that "there shall be no chronic toxicity in ambient waters" (BP, page 3-4). In 1986, the Board initiated the Effluent Toxicity Characterization Program (ETCP), with the goal of developing and implementing toxicity limits for each discharger based on actual characteristics of both receiving waters and waste streams. Dischargers were required to monitor their effluent using critical life stage toxicity tests to generate information on toxicity test species sensitivity and effluent variability to allow development of appropriate chronic toxicity effluent limitations. In 1988 and 1991, selected dischargers conducted two rounds of effluent characterization. A third round was completed in 1995, and the Board is evaluating the need for an additional round. Board guidelines for conducting toxicity tests and analyzing results were published in 1988 and last updated in 1991. The Board adopted Order No. 92-104 in August 1992 amending the permits of eight dischargers to include numeric chronic toxicity limits. However, due to the court decision which invalidated the California Enclosed Bays and Estuaries Plan and Inland Surface Waters Plan, on which Order No. 92-104 was based, the SWRCB stated, by letter dated November 8, 1993, that the Board will have to reconsider the Order. In the meantime, permits now include narrative rather than numeric limits. The numeric test values should then be used as toxicity "triggers" to first accelerate monitoring and then initiate Toxicity Reduction Evaluations (TREs).

59. *Board Program Update.* The Board intends to reconsider Order No. 92-104 as directed by the SWRCB, and to update, as appropriate, the Board's Whole Effluent Toxicity (chronic and acute) program guidance and requirements. This will be done based on analysis of discharger routine monitoring and ETCP results, and in accordance with current USEPA and SWRCB guidance. In the interim, decisions regarding the need for and scope of chronic toxicity requirements for individual dischargers will continue to be made based on BPJ as indicated in the Basin Plan.

60. *Permit Requirements.* In accordance with USEPA and SWRCB Task Force guidance, and based on BPJ, this permit includes requirements for chronic toxicity monitoring based on the Basin Plan narrative toxicity objective. This permit includes the Basin Plan narrative toxicity objective as the applicable effluent limit, implemented via monitoring with numeric values as "triggers" to initiate accelerated monitoring and to initiate a chronic toxicity reduction evaluation (TRE). The permit requirements for chronic toxicity are also consistent with the CTR and SIP requirements. The Discharger participated in the ETCP over 10 years ago with testing of influent Contra Costa Canal Water, and effluent using *Ceriodaphnia*. The results of the tests did not show any chronic toxicity. This Order requires monitoring with *Ceriodaphnia* to verify current conditions.

61. *Permit Reopener.* The Board will consider amending this permit to include numeric toxicity limits if the Discharger fails to aggressively implement all reasonable control measures included in its approved TRE workplan, following detection of consistent significant non-artifactual toxicity.

Pollutant Prevention and Pollutant Minimization

62. The Discharger has established a Pollution Prevention Program under the requirements specified by the Board.
    a. Section 2.4.5 of the SIP specifies under what situations and for which priority pollutant(s) (i.e., reportable priority pollutants) the Discharger shall be required to conduct a Pollutant Minimization Program in accordance with Section 2.4.5.1.
    b. There may be some redundancy required between the Pollution Prevention Program and the Pollutant Minimization Program.
    c. Where the two programs' requirements overlap, the Discharger is allowed to continue/modify/expand its existing Pollution Prevention Program to satisfy the Pollutant Minimization Program requirements.
    d. For copper, lead, mercury, nickel, and selenium, the Discharger will conduct any additional source control measures described in the Discharger's infeasibility reports submitted on May 1 and 2, 2002, in accordance with California Water Code 13263.3 and Section 2.1 of the SIP. Section 13263.3 establishes a separate process outside of the NPDES permit process for preparation, review, approval, and implementation of pollution minimization measures.

63. The Board staff intends to require an objective third party to establish model programs, and to review program proposals and reports for adequacy. This is to encourage use of Pollution Prevention and does not abrogate the Board's responsibility for regulation and review of the Discharger's Pollution Prevention Program. Board staff will work with the Discharger and other dischargers to identify the appropriate third party for this effort.

Requirement for Monitoring of Pollutants in Effluent and Receiving Water to Implement New Statewide Regulations and Policy

64. *Insufficient Effluent and Ambient Background Data.* Staff's review of the effluent and ambient background monitoring data found that there were insufficient data to determine reasonable potential and calculate numeric WQBELs, where appropriate, for most pollutants listed in the SIP.

65. *SIP- Required Dioxin study.* The SIP states that each Board shall require major and minor POTWs and industrial dischargers in its region to conduct effluent monitoring for the 2,3,7,8-TCDD congeners whether or not an effluent limit is required for 2,3,7,8-TCDD. The monitoring is intended to assess the presence and amounts of the congeners being discharged to inland surface waters, enclosed bays, and estuaries. The Boards will use these monitoring data to establish strategies for a future multi-media approach to control these chemicals.

66. On August 6, 2001, the Board sent a letter to all the permitted dischargers pursuant to Section 13267 of the California Water Code requiring the submittal of effluent and receiving water data on priority pollutants. This formal request for technical information addresses the insufficient effluent and ambient background data, and the dioxin study. The letter (described above) is referenced throughout the permit as the "August 6, 2001 Letter".

67. Pursuant to the August 6, 2001 Letter from Board Staff, the Discharger is required to submit workplans and sampling results for characterizing the levels of selected constituents in the effluent and ambient receiving water.

68. *Monitoring Requirements (Self-Monitoring Program).* The SMP includes monitoring at the outfall for conventional, non-conventional, and toxic pollutants, and acute and chronic toxicity. For the

most part, the monitoring is the same as required by the previous Order. The previous Order required weekly monitoring for influent settleable solids and TSS. Since the facility has consistently demonstrated that the lagoon system provides adequate settling and it is not a municipal wastewater treatment facility (which are required under Federal regulations to achieve specific TSS removal efficiencies), no influent TSS and settleable solids monitoring is required under this Order. Monthly monitoring is required for arsenic, lead, mercury and nickel since these parameters have been observed in the effluent and demonstrate RP. Monitoring for 4,4'-DDE and dieldrin is required to demonstrate compliance with the final effluent limits. Twice yearly monitoring for 4,4'-DDE and dieldrin is appropriate because they have not been detected in the effluent to date. Dioxin and furan monitoring are required because these pollutants are listed as causing impairment in Suisun Bay and are required to be sampled as per the SIP (Page 27-28), and August 6, 2001, letter. Previous monitoring for cadmium, chromium, cyanide, selenium, silver, zinc and "Table 1" parameters is replaced by more comprehensive monitoring as required by the August 6, 2001 Letter. This Order specifies that copper, and selenium monitoring under the August 6, 2001 be performed at least twice per month to provide sufficient data to determine interim limits, as appropriate.

69. *Optional Mass Offset.* This Order contains requirements to prevent further degradation of the impaired water body. Such requirements include the adoption of interim mass limits that are based on treatment plant performance, provisions for aggressive source control, feasibility studies for wastewater reclamation, and treatment plant optimization. After implementing these efforts, the Discharger may find that further net reductions of the total mass loadings of the 303(d)-listed pollutants to the receiving water can only be achieved through a mass offset program. This Order includes an optional provision for a mass offset program.

Storm Water

70. *Regulation.* Federal Regulations for storm water discharges were promulgated by the USEPA on November 19, 1990. The regulations [40 Code of Federal Regulations (CFR) Parts 122, 123, and 124] require specific categories of industrial activity (industrial storm water) to obtain an NPDES permit and to implement Best Available Technology Economically Available (BAT) and Best Conventional Pollutant Control Technology (BCT) to control pollutants in industrial storm water discharges.

71. *Exemption from Coverage under Statewide Storm water General Permit.* The State Board adopted a statewide NPDES permit for storm water discharges associated with industrial activities (NPDES General Permit CAS000001, adopted November 19, 1991, amended September 17, 1992, and reissued April 17, 1997). The Discharger is not required to be covered under the General Permit because all of the storm water is captured within the lagoon and treated to the standards contained in the Discharger's permit.

72. *Storm Water Pollution Prevention Plan.* This Order retains the existing Order requirement to update and maintain a storm water pollution prevention plan (SWPPP). As part of this SWPPP, the operator must specifically apply measures to prevent, to the maximum extent practicable, spills of chemical reagents, products, and byproduct and respond quickly and effectively to any spills that occur. In addition, the operator must evaluate whether all storm water from the alum production facility is being retained on-site, i.e., not discharged to the lagoon system. If it is not possible to contain all storm water from alum production, the operator must work with the alum facility operator to ensure that proper BMPs are installed and maintained. Similarly, the operator must coordinate with the

polymer facility operator to ensure that any necessary BMPs have been installed and maintained for ancillary operations at the polymer facility.

Other Discharge Characteristics and Permit Conditions

73. *O & M Manual.* An Operations and Maintenance Manual is maintained by the Discharger for purposes of providing plant and regulatory personnel with a source of information describing all equipment, recommended operation strategies, process control monitoring, and maintenance activities. The Discharger shall operate and maintain its wastewater collection, treatment and disposal facilities in a manner to ensure that all facilities are adequately staffed, supervised, financed, operated, maintained, repaired, and upgraded as necessary, in order to provide adequate and reliable transport, treatment, and disposal of all wastewater from both existing and planned future wastewater sources under the Discharger's service responsibilities. In order to remain a useful and relevant document, the manual shall be kept updated to reflect significant changes in treatment facility equipment and operation practices.

74. *NPDES Permit.* This Order serves as an NPDES Permit, adoption of which is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code [California Environmental Quality Act (CEQA)] pursuant to Section 13389 of the California Water Code. In addition, adoption of this Order is exempt from CEQA pursuant to California Code of Regulations, Title 11, Section 15301, involving negligible or no expansion of use of an existing facility.

75. *Notification.* The Discharger and interested agencies and persons have been notified of the Board's intent to reissue requirements for the existing discharge and have been provided an opportunity to submit their written views and recommendations.

76. *Public Hearing.* The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to the provisions of Division 7 of the California Water Code and regulations adopted thereunder, and to the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, that General Chemical (Discharger) shall comply with the following:

A. DISCHARGE PROHIBITIONS

1. Discharge of treated wastewater at a location or in a manner different from that described in this Order is prohibited.

2. Discharge of wastewater at any point where it does not receive an initial dilution of at least 10:1, or into dead-end slough and similar confined waters is prohibited.

3. The use of algaecides or anti-fouling additives in the cooling water system is prohibited.

4. Application of algaecides and herbicides in and around the lagoon is prohibited.

5. Direct discharge of domestic sanitary waste to the treatment lagoon or to surface waters of the state is prohibited.

6. Discharge of process wastewater from aluminum sulfate and polymer manufacture is prohibited.

7. Discharges of water, materials, or wastes other than storm water, which are not otherwise authorized by this NPDES permit, to a storm drain system or waters of the State are prohibited.

8. Storm water discharges shall not cause pollution, contamination, or nuisance to the receiving water.

B. EFFLUENT LIMITATIONS

Conventional Pollutants

The following effluent limitations apply to effluent discharged, to Suisun Bay:

1. The effluent shall not exceed the following limits listed in Table 2.

Table 2. Conventional Pollutant Effluent Limitations

Constituent	Units	Monthly Average	Weekly Average	Daily Maximum
a. Biochemical Oxygen Demand (BOD)	mg/L	30	45	
b. Total Suspended Solids (TSS)	mg/L	30	45	
c. Settleable Matter	ml/l-hr	0.1	--	0.2

2. Effluent Limitation for pH:
The pH of the effluent shall not exceed 9 nor be less than 6. The Discharger may elect to use a continuous on-line monitoring system(s) for measuring pH. If the discharger employs continuous monitoring, then the Discharger shall be in compliance with the pH limitation specified herein, provided that both of the following conditions are satisfied: (i) The total time during which the pH values are outside the required range of pH values shall not exceed 7 hours and 26 minutes in any calendar month; and (ii) No individual excursion from the range of pH values shall exceed 60 minutes.

Toxic Pollutants

3. Whole Effluent Acute Toxicity
Representative samples of the effluent shall meet the following limits for acute toxicity. Compliance with these limits shall be achieved in accordance with Provision D.7 of this Order.

   a. The survival of bioassay test organisms in 96-hour bioassays of undiluted effluent shall be:
      (1) An eleven (11)-sample median value of not less than 90 percent survival; and
      (2) An eleven (11)-sample 90th percentile value of not less than 70 percent survival.

b. These acute toxicity limits are further defined as follows:
   (1) 11-sample median limit:
   Any bioassay test showing survival of 90 percent or greater is not a violation of this limit. A bioassay test showing survival of less than 90 percent represents a violation of this effluent limit, if five or more of the past ten or fewer bioassay tests also show less than 90 percent survival.
   (2) 90th percentile limit:
   Any bioassay test showing survival of 70 percent or greater is not a violation of this limit. A bioassay test showing survival of less than 70 percent represents a violation of this effluent limit, if one or more of the past ten or fewer bioassay tests also show less than 70 percent survival.
   (3) If the Discharger demonstrates to the satisfaction of the Executive Officer that toxicity exceeding the levels cited above is caused by ammonia and that the ammonia in the discharge is not adversely impacting receiving water quality or beneficial uses, then such toxicity does not constitute a violation of this effluent limit.

4. Chronic Toxicity
   Compliance with the Basin Plan narrative chronic toxicity objective shall be achieved in accordance with Provision D.8 of this Order.

5. Toxic Substances: The effluent shall not exceed the following limits as listed in Table 3:

Table 3. Toxic Substance Effluent Limitations

Constituent	Daily Maximum	Monthly Average	Interim Daily Maximum	Interim Monthly Average	Units	Notes
a. Arsenic	540	270			µg/L	(1)
b. Copper						(6)
c. Cyanide						(6)
d. Lead			56		µg/L	(1),(2)
e. Mercury			1		µg/L	(1),(3)
f. Nickel			71		µg/L	(1),(4)
g. Selenium						(6)
h. 4,4'-DDE	0.0012	0.00059			µg/L	(1),(5)
h. Dieldrin	0.00028	0.00014			µg/L	(1),(5)
i. Fluoride	55	30			lbs/day	(1)

Footnotes:

(1) (a) All analyses shall be performed using current USEPA methods, or equivalent methods approved in writing by the Executive Officer.

(b) Limits apply to the average concentration of all samples collected during the averaging period (Daily = 24-hour period; Monthly = calendar month).

(c) All metal limits are in total recoverable.

(2) Lead: These interim limits shall remain in effect until March 31, 2010.

(3) Mercury: Effluent mercury monitoring shall be performed by using ultra-clean sampling and analysis techniques, with a method detection limit of 0.002 µg/L or lower. The interim limit for mercury shall remain in effect until March 31, 2010, or until the Board amends the limit based on the WLA in the TMDL for mercury. However, during the next permit reissuance, Board staff may re-evaluate the interim limits.

(4) Nickel: The interim limit for nickel shall remain in effect until March 31, 2010 or until the Board amends the limit based on the SSO for nickel

(5) 4,4'-DDE and Dieldrin: As outlined in Section 2.4.5 of the SIP, compliance with these final limits is determined by comparing the effluent data with the Minimum Level in Appendix 4 of the SIP: 0.05 µg/L for 4,4'-DDE, and 0.01 µg/L for dieldrin. A daily maximum or monthly average value for a given constituent shall be considered non-compliant with the effluent limit only if it exceeds the effluent limitation and the reported ML as listed in Appendix 4 in the SIP.

(6) Effluent limits to be determined based on effluent and receiving water data required pursuant to the provisions of this Order.

6. Interim Mercury Mass Emission Limit

Until TMDL and WLA efforts for mercury provide enough information to establish a different WQBEL, the Discharger shall demonstrate that the total mercury mass loading from discharges to Suisun Bay has not increased by complying with the following:

a. *Interim mass emission limit.* The interim mass emission limit for mercury is 0.021 kilograms per month (kg/month). (If more than one concentration measurement is obtained in a calendar month, the average of these measurements is used as the monthly concentration value for that month. If test results are less than the method detection limit (MDL) used, the concentration value shall be assumed to be equal to the MDL). This was calculated based on flow data at the 99 percentile and the maximum effluent concentration from effluent data gathered from January 2000 through December 2001.

b. Compliance with this limit shall be evaluated using monthly moving averages of total mass load, computed as described below:

12-Month Monthly Moving Average of Total Mass Load = Average of the monthly total mass loads from the past 12 months

Monthly Total Mass Load (kg/month) = monthly plant effluent flow (in mgd) from the Outfall (E-001) × monthly effluent concentration measurements (in µg/L) corresponding to the above flows, for samples taken at E-001 × 0.1151 (conversion factor to convert million gallons/day × µg/L to kg/month).

c. The Discharger shall submit a cumulative total of mass loadings for the previous 12 months with each monthly Self-Monitoring Report. Compliance of each month will be determined based on the 12-month moving averages over the previous 12 months of monitoring calculated as using the

method described in section B.7.b above. The Discharger may use monitoring data collected under accelerated schedules (i.e., special studies) to determine compliance.

d. The mercury TMDL and WLAs will supersede this interim mass emission limitation upon their completion. The Clean Water Act's anti-backsliding rule, Section 402(o), indicates that this Order may be modified to include a less stringent requirement following completion of the TMDL and WLA, if the requirements for an exception to the rule are met.

C. RECEIVING WATER LIMITATIONS

1. The discharge of waste shall not cause the following conditions to exist in waters of the State at any place:

   a. Floating, suspended, or deposited macroscopic particulate matter or foam;

   b. Bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses;

   c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;

   d. Visible, floating, suspended, or deposited oil or other products of petroleum origin; and

   e. Toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on wildlife, waterfowl, or other aquatic biota, or which render any of these unfit for human consumption, either at levels created in the receiving waters or as a result of biological concentration.

2. The discharge of waste shall not cause the following limits to be exceeded in waters of the State at any one place within 1 foot of the water surface:

   a. Dissolved Oxygen: 7.0 mg/L, minimum

      The median dissolved oxygen concentration for any three consecutive months shall not be less than 80% of the dissolved oxygen content at saturation. When natural factors cause concentrations less than that specified above, then the discharge shall not cause further reduction in ambient dissolved oxygen concentrations.

   b. Dissolved Sulfide: 0.1 mg/L, maximum

   c. pH: Variation from normal ambient pH by more than 0.5 pH units.

   d. Un-ionized Ammonia: 0.025 mg/L as N, annual median; and
      0.16 mg/L as N, maximum.

   e. Nutrients: Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

3. The discharge shall not cause a violation of any particular water quality standard for receiving waters adopted by the Board or the State Board as required by the Clean Water Act and regulations adopted

thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Clean Water Act, or amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

D. PROVISIONS

1. Permit Compliance and Rescission of Previous Waste Discharge Requirements

The Discharger shall comply with all sections of this Order beginning on July 1, 2002. Requirements prescribed by this Order supersede the requirements prescribed by Order No. 96-032. Order No. 96-032 is hereby rescinded upon the effective date of this Order.

2. Storm Water Pollution Prevention Plan

Order 96-032 required the Discharger to develop and implement a Storm Water Pollution Prevention Plan (SWPPP). This Order carries over that requirement that the Discharger shall update and submit the updated SWPPP acceptable to the Executive Officer by October 1st of each year. The Discharger shall implement the SWPPP and the SWPPP shall comply with the requirements contained in the attached Standard Provisions. Specifically, the SWPPP shall be updated to address all areas contributing storm water discharge from facilities owned and operated by General Chemical. The Discharger must also address whether any discharges from the alum and polymer production facilities are commingled with storm water influent to the lagoon. All such commingled storm water must either be addressed in the Discharger's SWPPP or, for the polymer plant, be addressed by a separate SWPPP prepared and implemented by the operator of the polymer facility. The Discharger's SWPPP shall further include pollution prevention measures. The measures may first include a study to determine sources of contaminants, followed by increased frequency of sweeping, cleaning and/or erosion control measures for certain areas.

Special Studies

3. Cyanide Study and Schedule

The Discharger shall participate in a regional discharger-funded effort to conduct a study for development of updated water quality objectives. The cyanide study plan was submitted by Central Contra Costa Sanitary District (CCCSD) on behalf of the Discharger on October 29, 2001. The Board intends to include, in a subsequent permit revision, a cyanide limit based on the study as an enforceable limit.

a. Annual reports shall be submitted by January 1 of each year by CCCSD on behalf of the Discharger documenting the progress of the cyanide objective studies. The annual report shall summarize the findings and progress to date, and include a realistic assessment of the shortest practicable time required to perform the remaining tasks of the studies.

b. By June 30, 2003, CCCSD, in co-operation with other dischargers, and on behalf of the Discharger, shall submit a report of completion for the updated water quality objective for cyanide. This study shall be adequate to allow the Board to initiate the development and adoption of the updated water quality objective for cyanide.

4. Effluent Characterization for Selected Constituents

The Discharger shall monitor and evaluate the discharged effluent for the constituents listed in Enclosure A of the Board's August 6, 2001 Letter. Compliance with this requirement shall be achieved in accordance with the specifications stated in the Board's August 6, 2001, Letter under Effluent Monitoring for major Dischargers. The Discharger's monitoring program developed under

the August 6, 2001, letter shall specifically include at least twice monthly monitoring for copper, and selenium for one year. Interim and final reports shall be submitted to the Board in accordance with the schedule specified below (same schedule is also specified in August 6, 2001, Letter):

Interim and Final Reports: An interim report is due on May 18, 2003. The report should summarize the data collected to date, and describe future monitoring to take place. A final report that presents all the data shall be submitted to the Board no later than 180 days prior to the permit expiration date. This final report shall be submitted with the application for permit reissuance.

5. Selenium and Copper Interim Effluent Limitations

The Board intends to re-open this Order to incorporate selenium and copper interim effluent limitations when sufficient data are available to characterize treatment system performance. The interim effluent limitations for both parameters will remain in effect until June 30, 2007 or until the Board amends the limits based on the WLAs in the TMDLs for selenium and the SSO for copper.

6. Pollutant Prevention and Minimization Program (PMP)

a. The Discharger shall continue to conduct and improve its existing Pollution Prevention Program in order to reduce pollutant loadings to the treatment plant and therefore to the receiving waters.
b. The Discharger shall submit an annual report, acceptable to the Executive Officer, no later than February 28th of each year. Annual reports shall cover January through December of the preceding year. Annual reports shall include at least the following information:
   (i) *A brief description of its treatment plant, treatment plant processes and service area.*
   (ii) *A discussion of the current pollutants of concern.* Periodically, the Discharger shall analyze its own situation to determine which pollutants are currently a problem and/or which pollutants may be potential future problems. This discussion shall include the reasons why the pollutants were chosen.
   (iii) *Identification of sources for the pollutants of concern.* This discussion shall include how the Discharger intends to estimate and identify sources of the pollutants.
   (iv) *Identification of tasks to reduce the sources of the pollutants of concern.* This discussion shall identify and prioritize tasks to address the Discharger's pollutants of concern. The Discharger may implement tasks themselves or participate in group, regional, or national tasks that will address its pollutants of concern. The Discharger is strongly encouraged to participate in group, regional, or national tasks that will address its pollutants of concern whenever it is efficient and appropriate to do so. A time line shall be included for the implementation of each task.
   (v) *Outreach to employees.* The Discharger shall inform employees about the pollutants of concerns, potential sources, and how they might be able to help reduce the discharge of pollutants of concerns into the treatment plant. The Discharger may provide a forum for employees to provide input to the Program.
   (vi) *Discussion of criteria used to measure the Program's and tasks' effectiveness.* The Discharger shall establish criteria to evaluate the effectiveness of its Pollution Prevention Program. This shall also include a discussion of the specific criteria used to measure the effectiveness of each of the tasks in item b. (iv), b. (v), and b. (vi).
   (vii) *Documentation of efforts and progress.* This discussion shall detail all of the Discharger's activities in the Pollution Prevention Program during the reporting year.
   (viii) *Evaluation of Program's and tasks' effectiveness.* This Discharger shall utilize the criteria established in b. (vii) to evaluate the Program's and tasks' effectiveness.

(ix) *Identification of specific tasks and time schedules for future efforts.* Based on the evaluation, the Discharger shall detail how it intends to continue or change its tasks in order to more effectively reduce the amount of pollutants to the treatment plant, and subsequently in its effluent.

c. According to Section 2.4.5 of the SIP, when there is evidence that a priority pollutant is present in the effluent above an effluent limitation and either:
   (i) A sample result is reported as detected, but not quantified (less than the Minimum Level) and the effluent limitation is less than the reported Minimum Level; or
   (ii) A sample result is reported as not detected (less than the Method Detection Limit) and the effluent limitation is less than the Method Detection Limit,

   the Discharger shall expand its existing Pollution Prevention Program to include the reportable priority pollutant. A priority pollutant becomes a reportable priority pollutant when (1) there is evidence that it is present in the effluent above an effluent limitation and either (c)(i) or (c) (ii) is triggered or (2) if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reported Minimum Level.

d. If triggered by the reasons in Provision D.6.b. and notified by the Executive Officer, the Discharger's Pollution Prevention Program shall, within 6 months, also include:
   (i) An annual review and semi-annual monitoring of potential sources of the reportable priority pollutant(s), which may include fish tissue monitoring and other bio-uptake sampling, or alternative measures approved by the Executive Officer when it is demonstrated that source monitoring is unlikely to produce useful analytical data;
   (ii) Quarterly monitoring for the reportable priority pollutant(s) in the influent to the wastewater treatment system, or alternative measures approved by the Executive Officer when it is demonstrated that influent monitoring is unlikely to produce useful analytical data;
   (iii) Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutant(s) in the effluent at or below the effluent limitation;
   (iv) Development of appropriate cost-effective control measures for the reportable priority pollutant(s), consistent with the control strategy; and
   (v) An annual status report that shall be sent to the RWQCB including:
      1. All Pollution Prevention monitoring results for the previous year;
      2. A list of potential sources of the reportable priority pollutant(s);
      3. A summary of all actions undertaken pursuant to the control strategy; and
      4. A description of actions to be taken in the following year.

e. To the extent where the requirements of the Pollution Prevention Program and the Pollutant Minimization Program overlap, the Discharger is allowed to continue/modify/expand its existing Pollution Prevention Program to satisfy the Pollutant Minimization Program requirements.

f. These Pollution Prevention/Pollutant Minimization Program requirements are not intended to fulfill the requirements in The Clean Water Enforcement and Pollution Prevention Act of 1999 (Senate Bill 709).

Toxicity Requirements

7. Whole Effluent Acute Toxicity

Compliance with acute toxicity requirements of this Order shall be achieved in accordance with the following:

a. From permit adoption date to , 2003:
   (1) Compliance with the acute toxicity effluent limits of this Order shall be evaluated by measuring survival of test organisms exposed to 96-hour static renewal or flow-through bioassays.
   (2) Test organisms shall be rainbow trout or three-spined sticklebacks unless specified otherwise in writing by the Executive Officer.
   (3) All bioassays shall be performed according to the "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms," 3rd Edition, with exceptions granted to the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP).

b. From April 1, 2003 on:
   (1) Compliance with the acute toxicity effluent limits of this Order shall be evaluated by measuring survival of test organisms exposed to 96-hour static renewal bioassays, or static renewal or flow-through bioassays. If the Discharger will use static renewal tests, or continue to use 3rd Edition Methods, they must submit a technical report by February 1, 2003, identifying the reasons why flow-through bioassay is not feasible using the approved EPA protocol (4th edition).
   (2) Test organisms shall be rainbow trout or fathead minnows unless specified otherwise in writing by the Executive Officer.
   (3) All bioassays shall be performed according to the "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms,"4th Edition, with exceptions granted to the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP).

8. Whole Effluent Chronic Toxicity

The Discharger shall monitor and evaluate the effluent from the treatment plant for chronic toxicity in order to demonstrate compliance with the Basin Plan narrative toxicity objective. Compliance with this requirement shall be achieved in accordance with the following.

a. The Discharger shall conduct routine chronic toxicity monitoring in accordance with the SMP of this Order.
b. If data from routine monitoring exceed either of the following evaluation parameters, then the Discharger shall conduct accelerated chronic toxicity monitoring. Accelerated monitoring shall consist of monitoring at twice per month.
c. Chronic toxicity evaluation parameters:
   (1) A three sample median value of 10 TU_c; and
   (2) A single sample maximum value of 20 TU_c.
   (3) These parameters are defined as follows:
      (a) Three-sample median: A test sample showing chronic toxicity greater than 1 TU_c represents an exceedance of this parameter, if one of the past two or fewer tests also show chronic toxicity greater than 1 TU_c.
      (b) TU_c (chronic toxicity unit): A TU_c equals 100/NOEL (e.g., If NOEL = 100, then toxicity = 1 TUc). NOEL is the no observed effect level determined from IC, EC, or NOEC values.
      (c) The terms IC, EC, NOEL and NOEC and their use are defined in **Attachment C** of this Order.

d. If data from two months of accelerated monitoring tests (4 tests in all) are found to be in compliance with the evaluation parameters, then routine monitoring shall be resumed.

e. If any of the tests conducted as part of accelerated monitoring exceed either evaluation parameter, thus confirming toxicity, then the Discharger shall initiate a chronic toxicity reduction evaluation (TRE).

f. The TRE shall be conducted in accordance with the following:

(1) The Discharger shall prepare and submit to the Board for Executive Officer approval a TRE workplan. An initial generic workplan shall be submitted within 120 days of the date of adoption of this Order. The workplan shall be reviewed and updated as necessary in order to remain current and applicable to the discharge and discharge facilities.

(2) The TRE shall be initiated within 30 days of the date of completion of the accelerated monitoring test observed to exceed either evaluation parameter.

(3) The TRE shall be conducted in accordance with an approved workplan.

(4) The TRE needs to be specific to the discharge and Discharger facility, and be in accordance with current technical guidance and reference materials including USEPA guidance materials. TRE shall be conducted as a tiered evaluation process, such as summarized below:

(a) Tier 1 consists of basic data collection (routine and accelerated monitoring).

(b) Tier 2 consists of evaluation of optimization of the treatment process including operation practices, and in-plant process chemicals.

(c) Tier 3 consists of a toxicity identification evaluation (TIE).

(d) Tier 4 consists of evaluation of options for additional effluent treatment processes.

(e) Tier 5 consists of evaluation of options for modifications of in-plant treatment processes.

(f) Tier 6 consists of implementation of selected toxicity control measures, and follow-up monitoring and confirmation of implementation success.

(5) The TRE may be ended at any stage if monitoring finds there is no longer consistent toxicity.

(6) The objective of the TIE shall be to identify the substance or combination of substances causing the observed toxicity. All reasonable efforts using currently available TIE methodologies shall be employed.

(7) As toxic substances are identified or characterized, the Discharger shall continue the TRE by determining the source(s) and evaluating alternative strategies for reducing or eliminating the substances from the discharge. All reasonable steps shall be taken to reduce toxicity to levels consistent with chronic toxicity evaluation parameters.

(8) Many recommended TRE elements parallel required or recommended efforts of source control, pollution prevention and storm water control programs. TRE efforts should be coordinated with such efforts. To prevent duplication of efforts, evidence of complying with requirements or recommended efforts of such programs may be acceptable to comply with TRE requirements.

(9) The Board recognizes that chronic toxicity may be episodic and identification of causes of and reduction of sources of chronic toxicity may not be successful in all cases. Consideration of enforcement action by the Board will be based in part on the Discharger's actions and efforts to identify and control or reduce sources of consistent toxicity.

g. Chronic Toxicity Monitoring Screening Phase Requirements, Critical Life Stage Toxicity Tests and definitions of terms used in the chronic toxicity monitoring are identified in **Attachment A** of the SMP. The Discharger shall comply with these requirements as applicable to the discharge.

h. Board staff are in the process of evaluating data from previous ETCP chronic toxicity testing, and may revise the above chronic toxicity requirements based on the results of this evaluation.

Optional Studies

9. Optional Mass Offset

The Discharger may submit to the Board for approval a mass offset plan to reduce 303(d) listed pollutants to the same watershed or drainage basin. The Board may modify this Order to allow an approved mass offset program.

10. Contingency Plan, Review and Status Reports

a. The Discharger shall maintain a Contingency Plan as required by Board Resolution 74-10 (attached), and as prudent in accordance with current industrial facility emergency planning. The discharge of pollutants in violation of this Order where the Discharger has failed to develop and/or adequately implement a contingency plan will be the basis for considering such discharge a willful and negligent violation of this Order pursuant to Section 13387 of the California Water Code.
b. The Discharger shall regularly review, and update as necessary, the Contingency Plan in order for the plan to remain useful and relevant to current equipment and operation practices. Reviews shall be conducted annually, and updates shall be completed as necessary.
c. Annually, the Discharger shall submit to the Board a report describing the current status of its Contingency Plan review and update. This report shall include a description or copy of any completed revisions, or a statement that no changes are needed. This report shall be submitted in accordance with the Annual Status Report Provision below.

11. Annual Status Reports

The reports identified above in Provisions D.10.c shall be submitted to the Board annually, by June 30 of each year. Modification of report submittal dates may be authorized, in writing, by the Executive Officer.

12. 303(d)-listed Pollutants Site-Specific Objective and TMDL Status Review

The Discharger shall participate in the development of TMDLs or SSOs or updated water quality objectives for copper, nickel, mercury, cyanide, 4,4'-DDE, and dieldrin. By January 31 of each year, the Discharger shall submit an update to the Board to document efforts made on participation in development of TMDLs, SSOs, or updated objectives. Board staff shall review the status of TMDL development. This Order may be reopened in the future to reflect any changes required by TMDL development.

13. Self-Monitoring Program

The Discharger shall comply with the SMP for this Order as adopted by the Board. The SMPs may be amended by the Executive Officer pursuant to USEPA regulation 40 CFR122.62, 122.63, and 124.5.

14. Standard Provisions and Reporting Requirements

The Discharger shall comply with all applicable items of the *Standard Provisions and Reporting Requirements for NPDES Surface Water Discharge Permits, August 1993* (attached), or any amendments thereafter. Where provisions or reporting requirements specified in this Order are different from equivalent or related provisions or reporting requirements given in 'Standard Provisions', the specifications of this Order shall apply.

15. Change in Control or Ownership.

a. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Board.

b. To assume responsibility of and operations under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order (see *Standard Provisions & Reporting Requirements*, August 1993, Section E.4.). Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code.

16. Permit Reopener

The Board may modify or reopen this Order and Permit prior to its expiration date in any of the following circumstances:

(1) If present or future investigations demonstrate that the discharge(s) governed by this Order and Permit will or have a reasonable potential to cause or contribute to adverse impacts on water quality and/or beneficial uses of the receiving waters;

(2) As new or revised WQOs come into effect for the San Francisco Bay estuary and contiguous water bodies (whether statewide, regional, or site-specific). In such cases, effluent limitations in this permit will be modified as necessary to reflect updated WQOs. Adoption of effluent limitations contained in this Order and Permit is not intended to restrict in any way future modifications based on legally adopted WQOs or as otherwise permitted under Federal regulations governing NPDES permit modifications;

(3) If translator or other water quality studies provide a basis for determining that a permit condition(s) should be modified. The Discharger may request permit modification on this basis. The Discharger shall include in any such request an antidegradation and anti-backsliding analysis

17. NPDES Permit

This Order shall serve as a National Pollutant Discharge Elimination System (NPDES) permit pursuant to Section 402 of the Clean Water Act or amendments thereto, and shall become effective July 1, 2002, provided the USEPA Regional Administrator has no objection. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

18. Order Expiration and Reapplication

a. This Order expires on May 31, 2007.

b. In accordance with Title 23, Chapter 3, Subchapter 9 of the California Administrative Code, the Discharger must file a report of waste discharge no later than 180 days before the expiration date of this Order as application for reissue of this permit and waste discharge requirements.

I, Loretta K. Barsamian, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on June 19, 2002.

Loretta K. Barsamian

LORETTA K. BARSAMIAN
Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM

FOR

GENERAL CHEMICAL CORPORATION
PITTSBURG, CONTRA COSTA COUNTY

NPDES PERMIT NO. CA0004979

ORDER NO. R2-2002-0071

Consists of:
Part A (not attached)
Adopted August 1993

And

Part B (Attached)
Adopted:

June 19, 2002
Effective on July 1, 2002

Note: Part A (dated August 1993) and Standard Provisions and Reporting Requirements for NPDES Surface Water Discharger Permits (dated August 1993) referenced in this Self Monitoring Program are not attached but are available for review or download on the Board's website at www.swrcb.ca.gov/rwqcb2.

PART B

CONTENTS:

I. DESCRIPTION of SAMPLING and OBSERVATION STATIONS

NOTE: A sketch showing the locations of all sampling and observation stations shall be included in the Annual Report, and in the monthly report if stations change.

A. INFLUENT

Station	Description
I	At any point in the water intake at which a sample representative of the water being utilized in the plant can be collected. (A sketch showing the location of this sampling station shall accompany each report)

B. EFFLUENT

Station	Description
E-001	At any point in the outfall from the treatment facilities between the point of discharge and the point at which all waste tributary to that outfall is present before discharge to Suisun Bay. (A sketch showing the location of this sampling station shall accompany each report)

II. SCHEDULE of SAMPLING, ANALYSES and OBSERVATIONS

The schedule of sampling, analysis and observation shall be that given in Table 1 below.

TABLE 1

SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS

Sampling Station:		I	E-001			
Type of Sample: **Parameter**	(units) [notes]	C-24 [1]	G [1]	Co [1]	C-24 [1]	Ob [1]
Flow Rate	(MGD) (2)	Cont/D			Cont/D	
BOD_5	(mg/L & kg/d)				M	
Total Susp. Solids	(mg/L & kg/d)				W	
Settleable Matter	(ml/L-hr)		2W			
Oil & Grease [3]	(mg/L & kg/d)		M			
Acute Toxicity [4]	(% Surv.)				M	
Chronic Toxicity [5]					2/Y	

Sampling Station:		I	E-001			
Type of Sample:		C-24	G	Co	C-24	Ob
Parameter	(units) [notes]	[1]	[1]	[1]	[1]	[1]
Ammonia Nitrogen	(mg/L & kg/d)				W	
Unionized Ammonia	(mg/L as N)					
Turbidity	(NTU)				M	
pH	(s.u.)			Cont/D		
Temperature	(°C)			Cont/D		
Dissolved Oxygen	(mg/L & % Sat)					
Sulfides, Total & Dissolved (mg/L) (if D.O. < 2.0 mg/L)						
All Applicable Standard Observations						Q
Observe for Containment of Runoff						E
Fluoride	(mg/l & lbs/day)				M	
Arsenic	(µg/L)				M	
Copper (ug/l)					2W[7]	
Cyanide (ug/l)					M	
Mercury	(µg/L & kg/d)		[6]		M	
Lead	(µg/L)				M	
Nickel	(µg/L)				M	
Selenium (ug/l)					2W[7]	
Dieldrin	(µg/L)				2/Y	
4,4'-DDE	(µg/L)				2/Y	

LEGEND FOR TABLE 1

Types of Samples

Co = Continuous
C-24 = 24-hour composite
G = Grab
Ob = Observations

Types of Stations

I = Treatment Plant Influent
E = Treatment Plant Effluent
C = Receiving water

Frequency of Sampling

Cont/D = continuous monitoring & daily reporting
D = Once each day
W = Once each week
M = Once each month
Q = twice each discharge season (with at least two-month intervals)
E = Each occurrence
2/W = 2 days per week
2/Y = Two times a year, one in wet season, one in dry season.

Parameter and Unit Abbreviations:

BOD_5 20°C = Biochemical Oxygen Demand (BOD), 5-day, at 20°C
TSS = Total Suspended Solids

MGD = million gallons per day
mg/L = milligrams per liter
ml/L-hr = milliliters per liter, per hour
µg/L = micrograms per liter
pg/L = picogram per litter
g/mo= grams per month
MPN/100 ml = Most Probable Number per 100 milliliters

24-hour Composite Sampling

24-hour composite sampling may be made up of discrete grabs collected over the course of a day and volumetrically or mathematically flow-weighted. Samples for inorganic pollutants maybe combined prior to analysis. Samples for organic pollutants should be analyzed separately. If only one grab sample will be collected, it should be collected during periods of maximum peak flows. Samples shall be taken on random days.

FOOTNOTES FOR TABLE 1

[1] Indicates sampling is required during the entire year. The Discharger shall use approved U.S. EPA Methods with the lowest Minimum Levels specified in the SIP, and described in the August 6, 2001, letter.

[2] Flow Monitoring: Influent and effluent flows shall be measured continuously, and recorded and reported daily. For influent and effluent flows, the following information shall also be reported, monthly:

Daily:	Daily Flow (MG)
Monthly:	Average Daily Flow (MGD)
Monthly:	Maximum Daily Flow (MGD)
Monthly:	Minimum Daily Flow (MGD)
Monthly:	Total Flow Volume (MG)

[3] Oil & Grease: Each Oil & Grease sample event shall consist of a composite sample comprised of three grab samples taken at equal intervals during the sampling date, with each grab sample being collected in a glass container. The grab samples shall be mixed in proportion to the instantaneous flow rates occurring at the time of each grab sample, within an accuracy of plus or minus 5 %. Each glass container used for sample collection or mixing shall be thoroughly rinsed with solvent rinsings as soon as possible after use, and the solvent rinsings shall be added to the composite sample for extraction and analysis.

[4] Bioassays: Effluent used for fish bioassays must be dechlorinated prior to testing. Monitoring of the bioassay water shall include, on a daily basis, the following parameters: pH, dissolved oxygen, ammonia nitrogen, and temperature. These results shall be reported. If a violation of acute toxicity requirements occurs, bioassay testing shall continue back to back until compliance is demonstrated.

[5] Chronic Toxicity:

1. *Chronic Toxicity Monitoring Requirements*
   a. Sampling. The discharger shall collect 24-hour composite samples of treatment plant effluent at the compliance point station specified in Table 1 of the Self-Monitoring Program, for critical life stage toxicity testing as indicated below. For toxicity tests requiring renewals, 24-hour composite samples collected on consecutive days are required.

b. Test Species: Chronic toxicity shall be monitored by using critical life stage test(s) and the most sensitive test species identified by screening phase testing or previous testing conducted under the ETCP. The Discharger shall conduct routine monitoring with *Ceriodaphnia dubia*.

c. Conditions for Accelerated Monitoring: The Discharger shall conduct accelerated monitoring when either of the following conditions is exceeded:
   (1) Three sample median value of 10 TUc, or
   (2) Single sample maximum value of 20 TUc.

d. Methodology: Sample collection, handling and preservation shall be in accordance with U.S. EPA protocols. The test methodology used shall be in accordance with the references cited in this Permit, or as approved by the Executive Officer. A concurrent reference toxicant test shall be performed for each test.

e. Dilution Series: The Discharger shall conduct tests at 2.5%, 5%, 10%, 25%, and 50%. The "%" represents percent effluent as discharged.

2. *Chronic Toxicity Reporting Requirements*
   a. Routine Reporting: Toxicity test results for the current reporting period shall include, at a minimum, for each test:
      (1) sample date(s)
      (2) test initiation date
      (3) test species
      (4) end point values for each dilution (e.g. number of young, growth rate, percent survival)
      (5) NOEC value(s) in percent effluent
      (6) IC_{15}, IC_{25}, IC_{40}, and IC_{50} values (or EC_{15}, EC_{25} ... etc.) in percent effluent
      (7) TUc values (100/NOEC, $100/IC_{25}$, or $100/EC_{25}$)
      (8) Mean percent mortality (±s.d.) after 96 hours in 100% effluent (if applicable)
      (9) NOEC and LOEC values for reference toxicant test(s)
      (10) IC_{50} or EC_{50} value(s) for reference toxicant test(s)
      (11) Available water quality measurements for each test (ex. pH, D.O., temperature, conductivity, hardness, salinity, ammonia)

   b. Compliance Summary: The results of the chronic toxicity testing shall be provided in the most recent self-monitoring report and shall include a summary table of chronic toxicity data from at least eleven of the most recent samples. The information in the table shall include the items listed above under Note [5] 2.a, item numbers 1, 3, 5, 6(IC_{25} or EC_{25}), 7, and 8.

[6] The Discharger may, at their option, sample mercury either as grab or 24-hr composite. Use ultra-clean sampling (EPA 1669) to the maximum extent practicable, and ultra-clean analytical methods (EPA 1631) for mercury monitoring. The Discharger may use alternative methods of analysis (such as EPA 245), if that alternate method has a Minimum Level of 2 ng/L or less.

[7] Copper and selenium shall be monitored every two weeks for one year and the data submitted pursuant to the Board's August 6, 2001, letter. Thereafter, the frequency may be once per month.

III. MODIFICATIONS to PART A of SELF-MONITORING PROGRAM

A. Modification to section F.4 of Part A: Self-Monitoring Report:

Monthly self-monitoring report: The purpose of the report is to document treatment performance, effluent quality and compliance with waste discharge requirements prescribed by this Order, as demonstrated by the monitoring program data and the discharger's operation practices. For each calendar month, a self-monitoring report (SMR) shall be submitted to the Board in accordance with the following:

1. The report shall be submitted to the Board no later than 30 days from the last day of the reporting month.

2. *Letter of Transmittal:* Each report shall be submitted with a letter of transmittal. This letter shall include the following:
   a. Identification of all violations of effluent limits or other discharge requirements found during the monitoring period;
   b. Details of the violations: parameters, magnitude, test results, frequency, and dates;
   c. The cause of the violations;
   d. Discussion of corrective actions taken or planned to resolve violations and prevent recurrence, and dates or time schedule of action implementation. If previous reports have been submitted that address corrective actions, reference to such reports is satisfactory;
   e. Signature: The letter of transmittal shall be signed by the Discharger's principal executive officer or ranking elected official, or duly authorized representative, and shall include the following certification statement:

      "I certify under penalty of law that this document and all attachments have been prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. The information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

3. *Compliance Evaluation Summary:* Each report shall include a compliance evaluation summary. This summary shall include, for each parameter for which effluent limits are specified in the Permit, the number of samples taken during the monitoring period, and the number of samples in violation of applicable effluent limits.

4. *Results of Analyses and Observations.*
   a. Tabulations of all required analyses and observations, including parameter, sample date and time, sample station, and test result;
   b. If any parameter specified in Table 1 of Part B is monitored more frequently than required by this permit and SMP, the results of this additional monitoring shall be included in the monitoring report, and the data shall be included in data calculations and compliance evaluations for the monitoring period;
   c. Calculations for all effluent limits that require averaging of measurements shall utilize an arithmetic mean, unless specified otherwise in this permit or SMP.

5. *Effluent Data Summary – U.S. EPA NPDES Discharge Monitoring Reports:* Summary tabulations of monitoring data including maximum, minimum and average values for subject monitoring period shall be reported in accordance with the format given by the U.S. EPA NPDES Discharge Report(s) (DMRs; U.S. EPA Form 3320-1 or successor). Copies of these DMRs shall be provided to U.S. EPA as required by U.S. EPA.

6. *Data Reporting for Results Not Yet Available*: The Discharger shall make all reasonable efforts to obtain analytical data for required parameter sampling in timely manner. The Board recognizes that certain analyses require additional time in order to complete analytical processes and result reporting. For cases where required monitoring parameters require additional time to complete analytical processes and reporting, and results are not available in time to be included in the SMR for the subject monitoring period, such cases shall be described in the SMR. Data for these parameters, and relevant discussions of any observed violations, shall be included in the next following SMR after the data become available.

7. *Report Submittal*: The Discharger shall submit SMRs to:

   Executive Officer
   San Francisco Bay Regional Water Quality Control Board
   1515 Clay Street, Suite 1400
   Oakland, CA 94612
   Attn: NPDES Division

B. Modification to section F.5 of Part A: Annual Report:

An Annual Report shall be submitted for each calendar year. The report shall be submitted to the Board by February 28 of the following year. This report shall include the following:

1. Both tabular and graphical summaries of monitoring data collected during the calendar year that characterizes treatment plant performance and compliance with waste discharge requirements.

2. A comprehensive discussion of treatment plant performance and compliance with waste discharge requirements. This discussion should include any corrective actions taken or planned such as changes to facility equipment or operation practices which may be needed to achieve compliance, and any other actions taken or planned that are intended to improve performance and reliability of the Discharger's wastewater collection, treatment or disposal practices.

C. Additions to Part A of Self-Modification Program:

1. Reporting Data in Electronic Format:

   The Discharger has the option to submit all monitoring results in electronic reporting format approved by the Executive Officer. If the Discharger chooses to submit the SMRs electronically, the following shall apply:

   a. *Reporting Method*: The Discharger shall submit SMRs electronically via the process approved by the Executive Officer in a letter dated December 17, 1999, Official Implementation of Electronic Reporting System (ERS).

b. *Modification of reporting requirements:* Reporting requirements F.4 in the attached *Self-Monitoring program, Part A*, dated August 1993, shall be modified as follows. In the future, the Board intends to modify Part A to reflect these changes.

c. Monthly Report Requirements: For each calendar month, a self-monitoring report (SMR) shall be submitted to the Board in accordance with the following:

   i. The report shall be submitted to the Board no later than 30 days from the last day of the reporting month.

   ii. Letter *of Transmittal:* Each report shall be submitted with a letter of transmittal. This letter shall include the following:

      (i) Identification of all violations of effluent limits or other discharge requirements found during the monitoring period;

      (ii) Details of the violations: parameters, magnitude, test results, frequency, and dates;

      (iii) The cause of the violations;

      (iv) Discussion of corrective actions taken or planned to resolve violations and prevent recurrence, and dates or time schedule of action implementation. If previous reports have been submitted that address corrective actions, reference to such reports is satisfactory.

      (v) Signature: The letter of transmittal shall be signed by the Discharger's principal executive officer or ranking elected official, or duly authorized representative, and shall include the following certification statement:

      "I certify under penalty of law that this document and all attachments have been prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. The information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

      (vi) Compliance Evaluation Summary: Each report shall include a compliance evaluation summary. This summary shall include the number of samples in violation of applicable effluent limits.

      (vii) Results of Analyses and Observations.

      (viii) Tabulations of all required analyses and observations, including parameter, sample date, sample station, and test result.

      (ix) If any parameter is monitored more frequently than required by this permit and SMP, the results of this additional monitoring shall be included in the monitoring report, and the data shall be included in data calculations and compliance evaluations for the monitoring period.

      (x) Calculations for all effluent limits that require averaging of measurements shall utilize an arithmetic mean, unless specified otherwise in this permit or SMP.

d. Data Reporting for Results Not Yet Available: The Discharger shall make all reasonable efforts to obtain analytical data for required parameter sampling in timely manner. The Board recognizes that certain analyses require additional time in order to complete analytical processes and result reporting. For cases where required monitoring parameters require additional time to complete analytical processes and reporting, and results are not available in time to be included in the SMR for the subjected monitoring period, such cases shall be described in the SMR. Data for these parameters, and relevant discussions of any observed violations, shall be included in the next following SMR after the data become available.

VI. SELF-MONITORING PROGRAM CERTIFICATION

I, Loretta K. Barsamian, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Board Order No. R2-2002-0071.

2. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the Discharger, and revisions will be ordered by the Executive Officer.

3. Is effective as of June 19, 2002.

Loretta K. Barsamian

LORETTA K. BARSAMIAN
Executive Officer

Attachment A: Chronic Toxicity – Definition of Terms and Screening Phase Requirements

ATTACHMENT A

CHRONIC TOXICITY

DEFINITION OF TERMS & SCREENING PHASE REQUIREMENTS

I. Definition of Terms

A. No observed effect level (NOEL) for compliance determination is equal to IC_{25} or EC_{25}. If the IC_{25} or EC_{25} cannot be statistically determined, the NOEL shall be equal to the NOEC derived using hypothesis testing.

B. Effective concentration (EC) is a point estimate of the toxicant concentration that would cause an adverse effect on a quantal, "all or nothing," response (such as death, immobilization, or serious incapacitation) in a given percent of the test organisms. If the effect is death or immobility, the term lethal concentration (LC) may be used. EC values may be calculated using point estimation techniques such as probit, logit, and Spearman-Karber. EC_{25} is the concentration of toxicant (in percent effluent) that causes a response in 25% of the test organisms.

C. Inhibition Concentration (IC) is a point estimate of the toxicant concentration that would cause a given percent reduction in a non-lethal, non-quantal biological measurement, such as growth. For example, an IC_{25} is the estimated concentration of toxicant that would cause a 25% reduction in average young per female or growth. IC values may be calculated using a linear interpolation method such as EPA's Bootstrap Procedure.

D. No observed effect concentration (NOEC) is the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specific time of observation. It is determined using hypothesis testing.

II. Chronic Toxicity Screening Phase Requirements

A. The Discharger shall perform screening phase monitoring:

1. Subsequent to any significant change in the nature of the effluent discharged through changes in sources or treatment, except those changes resulting from reductions in pollutant concentrations attributable to source control efforts, or

2. Prior to Permit reissuance. Screening phase monitoring data shall be included in the NPDES Permit application for reissuance. The information shall be as recent as possible, but may be based on screening phase monitoring conducted within 5 years before the permit expiration date.

B. Design of the screening phase shall, at a minimum, consist of the following elements:

1. Use of test species specified in Tables 1 and 2 (attached), and use of the protocols referenced in those tables, or as approved by the Executive Officer;

2. Two stages:

a. Stage 1 shall consist of a minimum of one battery of tests conducted concurrently. Selection of the type of test species and minimum number of tests shall be based on Table 3 (attached); and

b. Stage 2 shall consist of a minimum of two test batteries conducted at a monthly frequency using the three most sensitive species based on the Stage 1 test results and as approved by the Executive Officer.

3. Appropriate controls; and

4. Concurrent reference toxicant tests.

C. The Discharger shall submit a screening phase proposal to the Executive Officer for approval. The proposal shall address each of the elements listed above.

TABLE 1
CRITICAL LIFE STAGE TOXICITY TESTS FOR ESTUARINE WATERS

SPECIES	(Scientific name)	EFFECT	TEST DURATION	REFER-ENCE
alga	(Skeletonema costatum) (Thalassiosira pseudonana)	growth rate	4 days	1
red alga	(Champia parvula)	number of cystocarps	7-9 days	3
Giant kelp	(Macrocystis pyrifera)	percent germination; germ tube length	48 hours	2
abalone	(Haliotis rufescens)	abnormal shell development	48 hours	2
oyster mussel	(Crassostrea gigas) (Mytilus edulis)	{abnormal shell development; {percent survival	48 hours	2
Echinoderms (urchins - (sand dollar -	Strongylocentrotus purpuratus, S. franciscanus); Dendraster excentricus)	percent fertilization	1 hour	2
shrimp	(Mysidopsis bahia)	percent survival; growth	7 days	3
shrimp	(holmesimysis costata)	percent survival; growth	7 days	2
topsmelt	(Atherinops affinis)	percent survival; growth	7 days	2
silversides	(Menidia beryllina)	larval growth rate; percent survival	7 days	3

Toxicity Test References:

1. American Society for Testing Materials (ASTM). 1990. Standard Guide for conducting static 96-hour toxicity tests with microalgae. Procedure E 1218-90. ASTM Philadelphia, PA.

2. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to West Coast Marine and Estuarine Organisms. EPA/600/R-95/136. August 1995

3. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Marine and Estuarine Organisms. EPA/600/4-90/003. July 1994

TABLE 2
CRITICAL LIFE STAGE TOXICITY TESTS FOR FRESH WATERS

SPECIES	(Scientific name)	EFFECT	TEST DURATION	REFERENCE
fathead minnow	(Pimephales promelas)	survival; growth rate	7 days	4
water flea	(Ceriodaphnia dubia)	survival; number of young	7 days	4
alga	(Selenastrum capricornutum)	cell division rate	4 days	4

Toxicity Test Reference:

4. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. Third edition. EPA/600/4-91/002. July 1994

TABLE 3

TOXICITY TEST REQUIREMENTS FOR STAGE ONE SCREENING PHASE

REQUIREMENTS	RECEIVING WATER CHARACTERISTICS		
	Discharges to Coast	Discharges to San Francisco Bay ‡	
	Ocean	Marine/Estuarine	Freshwater
Taxonomic Diversity:	1 plant 1 invertebrate 1 fish	1 plant 1 invertebrate 1 fish	1 plant 1 invertebrate 1 fish
Number of tests of each salinity type: Freshwater (†): Marine/Estuarine:	0 4	1 or 2 3 or 4	3 0
Total number of tests:	4	5	3

† The fresh water species may be substituted with marine species if:
(1) The salinity of the effluent is above 1 parts per thousand (ppt) greater than 95% of the time, or
(2) The ionic strength (TDS or conductivity) of the effluent at the test concentration used to determine compliance is documented to be toxic to the test species.

‡ Marine/Estuarine refers to receiving water salinities greater than 1 ppt at least 95% of the time during a normal water year.
Fresh refers to receiving water with salinities less than 1 ppt at least 95% of the time during a normal water year.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
1515 CLAY STREET, SUITE 1400
OAKLAND, CA 94612
(510) 622 – 2300 Fax: (510) 622 - 2460

FACT SHEET

for

NPDES PERMIT and WASTE DISCHARGE REQUIREMENTS for

GENERAL CHEMICAL CORPORATION

PITTSBURG, CONTRA COSTA COUNTY

NPDES Permit No. CA0004979

ORDER NO. R2-2002-XXXX

PUBLIC NOTICE:

Written Comments

- Interested persons are invited to submit written comments concerning this draft permit.
- Comments should be submitted to the Regional Board no later than 5:00 p.m. on June 2, 2002.

Public Hearing

- The draft permit will be considered for adoption by the Board at a public hearing during the Board's regular monthly meeting at: Elihu Harris State Office Building, 1515 Clay Street, Oakland, CA; 1st floor Auditorium.
- This meeting will be held on: June 19, 2002, 2002, starting at 9:00 am.

Additional Information

- For additional information about this matter, interested persons should contact Regional Board staff member: Ms. Lila Tang, Phone: (510) 622-2425; email: Lwt@rb2.swrcb.ca.gov

This Fact Sheet contains information regarding an application for waste discharge requirements and National Pollutant Discharge Elimination System (NPDES) permit for the General Chemical Corporation (General Chemical) for industrial wastewater discharges. The Fact Sheet describes the factual, legal, and methodological basis for the proposed permit and provides supporting documentation to explain the rationale and assumptions used in deriving the limits.

I. INTRODUCTION

The General Chemical Corporation (hereinafter called the Discharger) has applied to the Board for reissuance of waste discharge requirements and a permit to discharge industrial wastewater to waters of the State and the United States under the National Pollutant Discharge Elimination System (NPDES).

The Discharger owns and operates the facility located at 501 Nichols Road in the city of Pittsburg, Contra Costa County. The Discharger manufactures electronic grade chemicals (e.g., HCl, HF, HNO_3, H_2SO_4, CH_3COOH, NH_4OH, and H_3PO_4) and aluminum sulfate (alum). Within the plant boundaries, one other company (Poly Pure) operates facilities for the production of water treatment polymers. The electronic chemical processes, although highly technical, are best characterized as

purification whereby commercial grade chemicals are purchased as raw materials and processed through numerous steps to meet the purity requirements of the semiconductor industry. These steps vary by specific chemical and may include: distillation, ion exchange, absorption, chemical treatment, filtration, and blending. Solvent packaging operations previously conducted at the site ceased operations in 2001.

Wastewater consists of water from process area air vent scrubbers, non-contact cooling water from the acid purification system, lab scrubber process equipment flush waters, boiler blowdown, quality assurance/control sink drains and storm water from most areas of the site north of the railroad tracks. "First flush" wastewater from pipe and equipment washing in the chemical packaging areas is stored in RCRA hazardous waste tanks. Subsequent flush wastewater is discharged to the lagoon.

Storm water runoff from the mixed acid etchants area, buffered oxide etchants area, and stripper solution production areas is collected in tanks and is hauled off site for disposal. The "first flush" of water from certain equipment is stored in RCRA tanks and is hauled off site. All process and storm water from the alum process area is segregated and reused in alum production. The storm water generated from the hydrofluoric acid plant is typically discharged to the Delta Diablo Sanitation District, although it may occasionally be discharged to the lagoon. All process wastewater and process area storm water from the polymer plant is also managed separately. Storm water from ancillary operations associated with the polymer plant is directed to the lagoon.

Wastewater treatment consists of pH neutralization by chemical addition followed by settling in an unlined lagoon separated by a dike from Suisun Bay. Sanitary wastewater is separately treated in a septic tank with effluent disposal to the Delta Diablo Sanitation District. Wastewater is continuously pumped from the lagoon, caustic added, and recirculated back to the lagoon. The Discharger discharges intermittently from the lagoon into Suisun Bay. In general, the Discharger only needs to discharge four to five times a week for 2 to 3 hours per day with a long term average flow rate of 0.31 million gallons per day (mgd) of wastewater via an outfall at a point 200 feet from shore at a depth of about 20 feet (Latitude: 38° 02' 48"N, Longitude: 121° 59' 10"W).

The receiving waters for the subject discharges are the waters of Suisun Bay. Beneficial uses for the Suisun Bay receiving water, as identified in the Basin Plan and based on known uses of the receiving waters in the vicinity of the discharge, are:

a. Water Contact Recreation
b. Non-contact Water Recreation
c. Wildlife Habitat
d. Preservation of Rare and Endangered Species
e. Fish Migration
f. Fish Spawning
g. Estuarine Habitat
h. Industrial Service Supply
i. Navigation
j. Commercial and Sport Fishing.

Effluent limitations included in the previous Order were derived from freshwater criteria. The highest salinity level from the San Francisco Regional Monitoring Program (RMP) for the Honker Bay Station for 1998-2000 has been 3.3 parts per thousand (ppt). The receiving water, Suisun Bay, is estuarine under the definitions included in both the Basin Plan and CTR. Therefore, the effluent

limitations specified in this Order for discharges to Suisun Bay are based on the lower of the marine and freshwater WQOs.

II. DESCRIPTION OF EFFLUENT

Board Order No. 96-032, (hereinafter the Previous Order), presently regulates the discharge. The discharger's wastewater has the characteristics summarized in Table A. The data in Table A represent at least quarterly monitoring for most metals performed from March 1999 through December 2001. Results for certain conventional pollutants (BOD_5 and TSS) reflect at least monthly monitoring from January 2000 through December 2001. Results for other conventional pollutants (pH and oil and grease) represent data reported in the NPDES permit renewal application, dated September 2000. Organic chemical analyses have only been performed on one effluent sample collected in 2000. Results for organic constituents have not been included in Table A, because, with the exception of naphthalene, all other organic constituents were not detected. The average values in Table A reflect the averages of only the detected values for all parameters.

Table A. Summary of Effluent Data for Outfall E001

Constituent	Average	Maximum
pH, range (min. – max.) (s. u.)	6.6 – 8.4[1]	8.4[1]
BOD_5 (mg/l)	6.8	44
Total Oil and Grease (mg/l)	--	<1[2]
TSS (mg/l)	13.8	72
Chemical Oxygen Demand (mg/l)	--	10*
Total Organic Carbon (mg/l)	--	2.8*
Ammonia (as N)	--	1.10*
Fluoride (mg/l)	--	8.4*
Nitrate-Nitrite (as N)	--	0.8*
Total Organic Nitrogen (mg/l)	--	0.8*
Sulfate (mg/l)	--	57*
Surfactants (mg/l)	--	0.18*
Aluminum (mg/l)	--	0.39*
Barium (mg/l)	--	0.02*
Boron (mg/l)	--	0.10*
Iron (mg/l)	--	0.75*
Magnesium (mg/l)	--	14*
Manganese (mg/l)	--	0.059*
Arsenic (µg/l)	67.7	110
Cadmium (µg/l)	--[3]	<10
Chromium (VI) (µg/l)	--[3]	<5
Copper (µg/l)	6.3	14
Lead (µg/l)	9.3	15
Mercury (µg/l)	0.6	1.5
Nickel (µg/l)	5.6	6
Selenium (µg/l)	8[4]	8
Silver (µg/l)	--[3]	<5
Zinc (µg/l)	29.2	54
Cyanide (µg/l)	10[5]	10
Naphthalene	2.1[4]	2.1

* Values were reported on the NPDES permit renewal application, dated September 2000.

[1] pH values were reported on the NPDES permit renewal application (September 2000).
[2] Oil and grease daily maximum was reported on the NPDES permit renewal application (September 2000).
[3] All values were reported below detection levels, therefore no average value is presented.
[4] Value represents results from single monitoring event, therefore is also representative of maximum value.
[5] One detected value of 10 µg/l.

III. GENERAL RATIONALE

The following documents are the bases for the requirements contained in the proposed Order, and are referred to under the specific rationale section of this Fact Sheet.

- Federal Water Pollution Control Act, as amended (hereinafter the **CWA**).
- Federal Code of Regulations, Title 40 - Protection of Environment, Chapter 1, Environmental Protection Agency, Subchapter D, Water Programs, Parts 122-129 (hereinafter referred to as 40 CFR specific part number).
- Water Quality Control Plan, San Francisco Bay Basin, adopted by the Board on June 21, 1995 (hereinafter the **Basin Plan**). The California State Water Resources Control Board (hereinafter the **State Board**) approved the Basin Plan on July 20, 1995 and by California State Office of Administrative Law approved it on November 13, 1995. The Basin Plan defines beneficial uses and contains WQOs for waters of the State, including Suisun Bay.
- California Toxics Rules, Federal Register, Vol. 65, No. 97, May 18, 2000 (hereinafter the **CTR**).
- National Toxics Rules 57 FR 60848, December 22, 1992, as amended (hereinafter the **NTR**).
- State Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, May 1, 2000 (hereinafter the **State Implementation Policy**, or **SIP**).
- Quality Criteria for Water, USEPA 440/5-86-001, 1986.
- Ambient Water Quality Criteria for Bacteria – 1986, USEPA440/5-84-002, January 1986.

IV. SPECIFIC RATIONALE

Several specific factors affecting the development of limitations and requirements in the proposed Order are discussed as follows:

1. Recent Plant Performance

Section 402(o) of CWA and 40 CFR 122.44(l) require that water quality-based effluent limits (**WQBELs**) in re-issued permits be at least as stringent as in the previous permit. The SIP specifies that interim effluent limitations, if required, must be based on current treatment facility performance or on existing permit limitations whichever is more stringent. In determining what constitutes "recent plant performance", best professional judgment (**BPJ**) was used. Effluent monitoring data collected from 1999 to 2001 are considered representative of recent plant performance. These data specifically accounts for flow variation due to wet and dry years.

2. Impaired Water Bodies in 303(d) List

The USEPA Region 9 office approved the State's 303(d) list of impaired waterbodies on May 12, 1999. The list was prepared in accordance with section 303(d) of the CWA to identify specific water bodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations on point sources. Suisun Bay is listed for copper, mercury, nickel, selenium, dioxin compounds, furan compounds, chlordane, DDT, diazinon, dieldrin, and PCBs.

The SIP requires final effluent limits for all 303(d)-listed pollutants to be based on total maximum daily loads (**TMDL**) and wasteload allocation (**WLA**) results. The SIP and federal regulations also require that final concentration limits be included for all pollutants with reasonable potential (RP). The SIP requires that where the discharger has demonstrated infeasibility to meet the final limits, interim concentration limits, and performance-based mass limits for bioaccumulative pollutants, be established in the permit with a compliance schedule in effect until final effluent limits are adopted. The SIP also requires the inclusion of appropriate provisions for waste minimization and source control.

3. Basis for Prohibitions

a) Prohibition A.1 (no discharges other than as described in the permit): This prohibition is based on the Basin Plan, previous Order and BPJ.

b) Prohibition A.2 (10:1 dilution): This prohibition is based on the Basin Plan. The Basin Plan prohibits discharges not receiving 10:1 dilution (Chapter 4, Discharge Prohibition No. 1).

c) Prohibition A.3 (no use of algaecides or antifouling agents in cooling water): This prohibition is based on the Basin Plan and previous Order.

d) Prohibition A.4 (no application of algaecides or antifouling agents in and around the lagoon): This prohibition is based on the BPJ.

e) Prohibition A.5 (no direct discharge of domestic sanitary waste to the treatment lagoon or surface waters): This prohibition is based on the previous Order and BPJ.

f) Prohibition A.6 (no discharge of process wastewater from aluminum sulfate and polymer manufacture): This prohibition is based on the previous Order and BPJ.

g) Prohibition A.7 (no discharge of water materials, or wastes other than storm water): This prohibition is based on the Basin Plan, previous Order, and BPJ.

h) Prohibition A.8 (storm water discharges shall not cause pollution, contamination, or nuisance to receiving waters): This prohibition is based on BPJ.

4. Basis for Effluent Limitations

a) Effluent Limitations B.1 (Discharges to Suisun Bay; listed below):

Permit Limit	Parameter	Units	Monthly Average	Weekly Average	Daily Maximum	Instantaneous Maximum
B.1.a.	Biochemical Oxygen Demand (BOD)	mg/L	30	45	--	--
B.1.b.	Total Suspended Solids (TSS)	mg/L	30	45	--	--

B.1.c.	Settleable Matter	mg/L	0.1	--	0.2	--
B.2.	pH	>6, <9				

1. BOD and TSS, 30 mg/L monthly average and 45 mg/L weekly average (Effluent Limitation B.1.a and b): These are based on BPJ and are consistent with the previous Order. The facility has demonstrated compliance by existing plant performance.

2. Settleable Matter: These are based on BPJ and are consistent with the previous Order. The facility has demonstrated compliance by existing plant performance.

b) Effluent Limitation B.2 (pH): The pH limit is based on the Basin Plan, Table 4-2, page 4-69, and 40 CFR 133.102.

c) Effluent Limitation B.3 (Whole Effluent Toxicity): The Basin Plan specifies a narrative objective for toxicity, requiring that all waters shall be maintained free of toxic substances in concentrations that are lethal to or produce other detrimental response on aquatic organisms. Detrimental response includes but is not limited to decreased growth rate, decreased reproductive success of resident or indicator species, and/or significant alternations in population, community ecology, or receiving water biota. These effluent toxicity limits are necessary to ensure that this objective is protected. The acute toxicity limit is based on the Basin Plan Table 4-2, page 4-69.

d) Effluent Limitation B.4 (Chronic Toxicity): The chronic toxicity limit is based on the Basin Plan's narrative toxicity definition on page 3-4.

e) Effluent Limitation B.5 (Toxic Substances):

1. Reasonable Potential Analysis (RPA):
40 CFR 122.44(d)(1)(i) specifies that permits are required to include WQBELs for all pollutants "which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard". Thus, the fundamental step in determining whether or not a WQBEL is required is to assess a pollutant's reasonable potential of excursion of its applicable WQO or WQC. The following section describes the reasonable potential analysis and the results of such an analysis for the pollutants identified in the Basin Plan and the CTR.

   i) *WQOs and WQCs*: The RPA involves the comparison of effluent data with appropriate WQOs including narrative toxicity objectives in the Basin Plan, applicable WQCs in the CTR/NTR, and USEPA's 1986 Quality Criteria for Water. The Basin Plan objectives and CTR criteria are shown in the attachment to this Fact Sheet.

   ii) *Methodology*: RPA is conducted using the method and procedures prescribed in Section 1.3 of the SIP. Board staff have analyzed the effluent data to determine if the discharge had reasonable potential to cause or contribute to exceedances of applicable WQOs or WQCs. The attachment to this Fact Sheet shows the step-wise process described in Section 1.3 of the SIP.

   iii) *Effluent and background data*: The RPA is based on effluent data collected by the discharger from 1999 through 2001 for metals, phenol, and cyanide. In

determining RP for organic pollutants, effluent data collected in September 2000 were reviewed. Water quality data collected from 1993 to 2000 at the Sacramento River monitoring station through the Regional Monitoring Program were reviewed to determine the maximum observed background values. The RMP station in the Sacramento River has been sampled for most of the inorganic and some of the organic toxic pollutants. However, not all the constituents listed in the CTR were analyzed by the RMP during this time. This data gap is addressed by addressed by issuance of a technical information request (13267) letter dated August 6, 2001 by Board staff, entitled, Requirement for Monitoring of Pollutants in Effluent and Receiving Water to Implement New Statewide Regulations and Policy.

iv) *RPA determination*: The RPA results are shown below in **Table B** and the attachment to this Fact Sheet. Pollutants that tested positively for RP were arsenic, copper, lead, mercury, nickel, selenium, cyanide, and dieldrin.

Table B. Summary of Reasonable Potential Results

# in CTR	PRIORITY POLLUTANTS	MEC or Minimum DL[1] (µg/L)	Governing WQO/WQC (ug/L)	Maximum Background (µg/L)	RPA Results[2]
2	Arsenic	**110**	36	3.7	Y
4	Cadmium	**2**	0.7	0.06	N
5b	Chromium (VI)	5	11	NA	N
6	Copper	**14**	3.7	9.9	Y
7	Lead	**15**	1.4	2.4	Y
8	Mercury	**1.5**	0.025	0.038	Y
9	Nickel	**6**	7.1	21.8	Y
10	Selenium	**8**	5	0.3	Y
11	Silver	5	2.3	0.057	N
13	Zinc	**54**	58	18.2	N
14	Cyanide	**10**	1	NA	Y
16	2,3,7,8-TCDD (Dioxin)	0.00000226	1.4E-08	NA	Ud
17	Acrolein	10	780	NA	N
18	Acrylonitrile	10	0.66	NA	N
19	Benzene	1	71	NA	N
20	Bromoform	1	360	NA	N
21	Carbon Tetrachloride	1	4.4	NA	N
22	Chlorobenzene	1	21000	NA	N
23	Chlordibromomethane	1	34	NA	N
24	Chloroethane	1	NA	NA	Uo
25	2-Chloroethylvinyl Ether	2	NA	NA	Uo
26	Chloroform	1	NA	NA	Uo
27	Dichlorobromomethane	1	46	NA	N
28	1,1-Dichloroethane	1	NA	NA	Uo
29	1,2-Dichloroethane	1	99	NA	N
30	1,1-Dichloroethylene	1	3.2	NA	N
31	1,2-Dichloropropane	1	39	NA	N
32	1,3-Dichloropropylene	1	1700	NA	N

# in CTR	PRIORITY POLLUTANTS	MEC or Minimum DL[1] (µg/L)	Governing WQO/WQC (ug/L)	Maximum Background (µg/L)	RPA Results[2]
33	Ethylbenzene	1	29000	NA	N
34	Methyl Bromide	1	4000	NA	N
35	Methyl Chloride	1	NA	NA	Uo
36	Methylene Chloride	4	1600	NA	N
37	1,1,2,2-Tetrachloroethane	1	11	NA	N
38	Tetrachloroethylene	1	8.85	NA	N
39	Toluene	1	200000	NA	N
40	1,2-Trans-Dichloroethylene	1	140000	NA	N
41	1,1,1-Trichloroethane	1	NA	NA	Uo
42	1,1,2-Trichloroethane	1	42	NA	N
43	Trichloroethylene	1	81	NA	N
44	Vinyl Chloride	1	525	NA	N
45	Chlorophenol	2	400	NA	N
46	2,4-Dichlorophenol	2	790	NA	N
47	2,4-Dimethylphenol	2	2300	NA	N
48	2-Methyl-4,6-Dinitrophenol	10	765	NA	N
49	2,4-Dinitrophenol	10	14000	NA	N
50	2-Nitrophenol	2	NA	NA	Uo
51	4-Nitrophenol	10	NA	NA	Uo
52	3-Methyl-4-Chlorophenol	5.0	NA	NA	Uo
53	Pentachlorophenol	10	7.9	NA	N
55	2,4,6-Trichlorophenol	2	6.5	NA	N
56	Acenaphthene	2	2700	0.005	N
57	Acenaphthylene	2	NA	NA	Uo
58	Anthracene	2	110000	0.0058	N
59	Benzidine	5	0.00054	NA	N
60	Benzo(a)Anthracene	2	0.049	0.0011	N
61	Benzo(a)Pyrene	2	0.049	0.00032	N
62	Benzo(b)Fluoranthene	2	0.049	0.0019	N
63	Benzo(ghi)Perylene	2	NA	0.00062	Uo
64	Benzo(k)Fluoranthene	2	0.049	0.00093	N
65	Bis(2-Chloroethoxy)Methane	5	NA	NA	Uo
66	Bis(2-Chloroethyl)Ether	2	1.4	NA	N
67	Bis(2-Chloroisopropyl)Ether	2	170000	NA	N
68	Bis(2-Ethylhexyl)Phthalate	5	5.9	NA	N
69	4-Bromophenyl Phenyl Ether	5	NA	NA	Uo
70	Butylbenzyl Phthalate	5	5200	NA	N
71	2-Chloronaphthalene	2	4300	NA	N
72	4-Chlorophenyl Phenyl Ether	2	NA	NA	Uo
73	Chrysene	2	0.049	0.001	N
74	Dibenzo(a,h)Anthracene	2	0.049	0.00067	N
75	1,2 Dichlorobenzene	2	17000	NA	N
76	1,3 Dichlorobenzene	2	2600	NA	N
77	1,4 Dichlorobenzene	2	2600	NA	N
78	3,3-Dichlorobenzidine	5	0.077	NA	N
79	Diethyl Phthalate	5	120000	NA	N
80	Dimethyl Phthalate	5	2900000	NA	N

# in CTR	PRIORITY POLLUTANTS	MEC or Minimum DL[1] (µg/L)	Governing WQO/WQC (ug/L)	Maximum Background (µg/L)	RPA Results[2]
81	Di-n-Butyl Phthalate	5	12000	NA	N
82	2,4-Dinitrotoluene	2	9.1	NA	N
83	2,6-Dinitrotoluene	5	NA	NA	Uo
84	Di-n-Octyl Phthalate	5	NA	NA	Uo
85	1,2-Diphenylhydrazine	5	0.54	NA	N
86	Fluoranthene	2	370	0.003	N
87	Fluorene	5	14000	0.0021	N
88	Hexachlorobenzene	2	0.00077	0.000053	N
89	Hexachlorobutadiene	2	50	NA	N
90	Hexachlorocyclopentadiene	2	17000	NA	N
91	Hexachloroethane	2	8.9	NA	N
92	Indeno(1,2,3-cd) Pyrene	2	0.049	0.0013	N
93	Isophorone	2	600	NA	N
94	Naphthalene	**2.1**	NA	0.0028	Uo
95	Nitrobenzene	2	1900	NA	N
96	N-Nitrosodimethylamine	2	8.1	NA	N
97	N-Nitrosodi-n-Propylamine	2	1.4	NA	N
98	N-Nitrosodiphenylamine	2	16	NA	N
99	Phenanthrene	2	NA	0.0041	Uo
100	Pyrene	2	11000	0.0025	N
101	1,2,4-Trichlorobenzene	2	NA	NA	Uo
102	Aldrin	0.08	0.00014	NA	N
103	alpha-BHC	0.06	0.013	NA	N
104	beta-BHC	0.06	0.046	NA	N
105	gamma-BHC	0.06	0.063	NA	N
106	delta-BHC	0.06	NA	NA	Uo
107	Chlordane	1	0.00059	0.000302	N
108	4,4'-DDT	0.2	0.00059	NA	N
109	4,4'-DDE	0.08	0.00059	0.00092	Y
110	4,4'-DDD	0.1	0.00084	NA	N
111	Dieldrin	0.06	0.00014	0.00038	Y
112	alpha-Endosulfan	0.1	0.0087	0.000036	N
113	beta-Endosulfan	0.1	0.0087	0.000042	N
114	Endosulfan Sulfate	0.2	240	0.0002	N
115	Endrin	0.4	0.0023	0.000019	N
116	Endrin Aldehyde	0.2	0.81	NA	N
117	Heptachlor	0.06	0.00021	NA	N
118	Heptachlor Epoxide	0.1	0.00011	0.000097	N
119-125	PCBs	0.5	0.00017	NA	N
126	Toxaphene	1	0.0002	NA	N
	Tributyltin	NA	0.01	NA	Ub, Ud

1) Maximum Effluent Concentration (MEC) in bold is the actual detected MEC, otherwise the MEC shown is the minimum detection level.
NA = Not Available (there is not monitoring data for this constituent).

2) RP =Yes, if either MEC or Background > WQO/WQC.
RP = No, if (1) both MEC and background < WQO/WQC or (2) no background and all effluent data non-detect, or no background and MEC<WQO/WQC (per WQ 2001-16 Napa Sanitation Remand)
RP = Ud (undetermined due to lack of effluent monitoring data).

RP = Uo (undetermined if no objective promulgated).
RP = Ub (undetermined due to lack of background data)

v) *Organic constituents with limited data*: Reasonable potential could not be determined for many of the organic priority or toxic pollutants due to (i) water quality objectives that are lower than current analytical techniques can measure, (ii) the absence of applicable WQOs or WQCs, or (iii) the absence of background data. As required by the August 6, 2001 letter from Board staff to all permittees, the Discharger is required to initiate or continue to monitor for those pollutants in this category using analytical methods that provide the best detection limits reasonably feasible. These pollutants' RP will be reevaluated in the future to determine whether there is a need to add numeric effluent limits to the permit or to continue monitoring.

vi) *Pollutants with no reasonable potential*: WQBELs are not included in the Order for constituents that do not have reasonable potential to cause or contribute to exceedance of applicable WQOs or WQCs. However, monitoring for those pollutants is still required, as specified in the August 6, 2001 letter. If concentrations or mass loads of these constituents were found to have increased significantly, the Discharger will be required to investigate the source(s) of the increase(s). Remedial measures are required if the increases pose a threat to water quality in the receiving water.

vii) *Permit Reopener:* The permit includes a reopener provision to allow numeric effluent limits to be added for any constituent that in the future exhibits RP to cause or contribute to exceedance of a WQO or WQC. This determination, based on monitoring results, will be made by the Board.

2. Final Water Quality-Based Effluent Limits (WQBELs): The final effluent limitations in the Effluent Limitations table in the Order are water quality-based. They were developed and set for the toxic and priority pollutants that were determined to have RP to cause or contribute to exceedances of the WQOs or WQCs. Final effluent limitations were calculated based on appropriate WQOs/WQCs, background concentrations at the Sacramento River Station, a maximum dilution credit of 10:1 or D=9 (for non-bioaccumulative pollutants), and the appropriate procedures specified in Section 1.4 of the SIP (See attachment to this Fact Sheet). The basis for the dilution credit is explained in the following section. For the purpose of the Proposed Order, final WQBELs refer to all non-interim effluent limitations. The WQO or WQC used for each pollutant with RP is indicated in Table C below as well as the attachment.

Table C. Water Quality Objectives/Criteria for Pollutants with RP

Pollutant	Chronic WQO/WQC (µg/L)	Acute WQO/WQC (µg/L)	Basis of Lowest WQO/WQC Used in RP
Arsenic	36	69	Basin Plan
Copper	3.7	5.8	CTR
Lead	1.4	35.5	Basin Plan
Mercury	0.025	-	Basin Plan
Nickel	7.1	140	Basin Plan

Pollutant	Chronic WQO/WQC (µg/L)	Acute WQO/WQC (µg/L)	Basis of Lowest WQO/WQC Used in RP
Selenium	5	20	NTR
Cyanide	1	1	NTR
4,4'-DDE	0.00059	-	CTR
Dieldrin	0.00014	-	CTR

3. BASIS for 10:1 DILUTION CREDIT – The previous permit found that the discharge achieves at least 10:1 dilution. In this permit reissuance, General Chemical did not request and did not provide justification for a dilution credit greater than 10:1. Even if General Chemical were to request a greater dilution, the Board is not required to grant it for persistent pollutants (e.g., copper, nickel) owing to the uncertainties related to dilution studies discussed below. Board staff believes a conservative limit of 10:1 dilution credit for discharges to the Bay is necessary for protection of beneficial uses.

   The basis for limiting the dilution credit is based on SIP provisions in Section 1.4.2. The following outlines the basis for derivation of the dilution credit. Detailed explanation of each point follows the list:

   a. A far-field background station is appropriate because the receiving waterbody (Bay) is a very complex estuarine system with highly variable and seasonal upstream freshwater inflows and diurnal tidal saltwater inputs.
   b. Due to the complex hydrology of the San Francisco Bay, a mixing zone cannot be accurately established.
   c. Previous dilution studies do not fully account for the cumulative effects of other wastewater discharges to the system.
   d. The SIP allows limiting a mixing zone and dilution credit for persistent pollutants (e.g., copper, silver, nickel and lead).

   The main justification for using a 10:1 dilution credit is uncertainty in accurately determining ambient background and uncertainty in accurately determining the mixing zone in a complex estuarine system with multiple wastewater discharges.

   a. **Complex Estuarine System Necessitates Far-Field Background** - The SIP allows background to be determined on a discharge-by-discharge or water body-by-water body basis (SIP section 1.4.3). Consistent with the SIP, Board staff has chosen to use a water body-by-water body basis because of the uncertainties inherent in accurately characterizing ambient background in a complex estuarine system on a discharge-by-discharge basis.

   With this in mind, the Sacramento River Station also fits the guidance for ambient background in the SIP compared to other stations in the Regional Monitoring Program. Section 1.4.3 of the SIP specifies that "preference should be given to...concentrations immediately upstream or near the discharge, but not within an allowed mixing zone for the discharge." The SIP further states that data are applicable if they are "representative of the ambient receiving water column that will mix with the discharge." The Sacramento River station is upstream, not within a mixing zone, and does represent water that will mix with the discharge. The Sacramento River is the primary source of

fresh inflow water to Suisun Bay and its flow varies seasonally. Salt water also influences Suisun Bay through diurnal tidal currents but its influence is generally less in the eastern portions of Suisun Bay, and less during the wet seasons when delta outflow is the highest (Jan-April).

b. **Uncertainties Prevent Accurate Mixing Zones in Complex Estuarine Systems** - There are uncertainties in accurately determining the mixing zones for each discharge. The models that have been used by dischargers to predict dilution have not considered the three-dimensional nature of the currents in the estuary resulting from the interaction of tidal flushes and seasonal fresh water outflows. Salt water is heavier than fresh water. Colder salt water from the ocean flushes in twice a day generally under the warmer fresh rivers waters that flows out annually. When these waters mix and interact, complex circulation patterns occur due to the different densities of these waters. These complex patterns occur throughout the estuary but are most prevalent in the San Pablo Bay, Carquinez Strait, and Suisun Bay areas. The locations change depending on the strength of each tide and the variable rate of delta outflow. Additionally, sediment loads to the Bay from the Central Valley also changes on a longer-term basis. These changes can result in changes to the depths of different parts of the Bay making some areas more shallow and/or other areas more deep. These changes affect flow patterns that in turn can affect the initial dilution achieved by a discharger's diffuser.

c. **Dye studies do not account for cumulative effects from other discharges** - The tracer and dye studies conducted are often not long enough in duration to fully assess the long residence time of a portion of the discharge that is not flushed out of the system. In other words, some of the discharge, albeit a small portion, makes up part of the dilution water. So unless the dye studies are of long enough duration, the diluting effect on the dye measures only the initial dilution with "clean" dilution water rather than the actual dilution with "clean" dilution water plus some amount of original discharge that resides in the system. Furthermore, both models and dye studies that have been conducted have not considered the effects of discharges from other nearby discharge sources, nor the cumulative effect of discharges from over 20 other major dischargers to San Francisco Bay system. While it can be argued the effects from other discharges are accounted for by factoring in the local background concentration in calculating the limits, accurate characterization of local background levels are also subject to uncertainties resulting from the interaction of tidal flushing and seasonal fresh water outflows described above.

d. **Mixing Zone Is Further Limited for Persistent Pollutants-** Discharges to the Bay are not completely-mixed discharges as defined by the SIP. Thus, the dilution credit should be determined using site specific information for incompletely-mixed discharges. The SIP in section 1.4.2.2 specifies that the Regional Board "significantly limit a mixing zone and dilution credit as necessary... For example, in determining the extent of ... a mixing zone or dilution credit, the RWQCB shall consider the presence of pollutants in the discharge that are ... persistent." The SIP defines persistent pollutants to be "substances for which degradation or decomposition in the environment is nonexistent or very slow." The pollutants at issue here are persistent pollutants (e.g., copper, lead, nickel). The dilution studies that estimate actual dilution do not address the effects of these persistent pollutants in the Bay environment, such as their long-term effects on sediment concentrations.

4. Interim Limits: Interim effluent limitations were derived for those constituents for which the Discharger has shown infeasibility of complying with the respective limits and has demonstrated that compliance schedules are justified based on the Discharger's source control and pollution minimization efforts in the past and continued efforts in the present and future. For copper, lead, mercury, nickel, selenium, and cyanide, there were insufficient effluent data (i.e., detected values) to develop statistically valid performance-based interim limits. Therefore, for lead, mercury, and nickel, the interim effluent concentration limits were based on the previous Order limits. The previous Order does not include limits for copper, selenium, and cyanide. For copper and selenium, development of effluent concentration limits is deferred until additional data are collected as required by the August 6, 2001 letter. This Board is requiring twice monthly monitoring for these parameters, which is beyond the minimum monthly monitoring required by the August 6, 2001 letter. For cyanide, the final WQBEL will likely be recalculated based on additional ambient background information and/or an updated objective for cyanide. In the interim, monthly monitoring for cyanide under the provisions of the August 6, 2001 will provide sufficient data to evaluate treatment performance and develop interim limits, as necessary. Interim performance-based mass limits have also been established for mercury. The interim limits are discussed in more detail below.

4. Compliance Schedules and Infeasibility Analysis
Board staff compared the maximum effluent concentration to the lowest WQBEL to determine if the Discharger can achieve immediate compliance with the final limits (see Table D below). If not, the Discharger is required to demonstrate it's infeasibility to comply with these limits immediately by demonstrating the extent to which past pollution prevention efforts have been implemented, as well as measurements of the efforts effectiveness and future plans for focused pollution prevention efforts.

On May 1 and 2, 2002, the Discharger submitted feasibility studies which demonstrated according to the Basin Plan (page 4-14, Compliance Schedule) or SIP (Section 2.1, Compliance Schedule), it is infeasible to immediately comply with the WQBELs calculated according to Section 1.4 of the SIP for copper, lead, mercury, nickel, and selenium. Therefore, this permit establishes a five-year compliance schedule for final limits based on CTR or NTR criteria (i.e., copper and selenium) and a compliance schedule of March 31, 2010 for final limits based on the Basin Plan objectives (i.e., lead, mercury, and nickel). The five-year and March 31, 2010 compliance schedules both exceed the length of the permit, therefore, these calculated final limits are intended for point of reference for the feasibility demonstration. Additionally, the actual final WQBELs for copper, mercury, nickel, and selenium may be based on either SSOs or the TMDLs/WLAs.

Pursuant to the SIP (Section 2.2.2, Interim Requirements for Providing Data), where available data are insufficient to calculate a final effluent limit (e.g., cyanide), a data collection period of May 18, 2003 is established. This Order contains a provision requiring the Discharger to join a group study for data collection in the ambient background and to determine site-specific objectives. The Discharger is required to participate in the studies and submit reports to the Board by 2003. The Board intends to include, in a subsequent permit revision, a final limit based on the study results. However, if the Discharger requests and demonstrates that it is infeasible to comply with the revised final limit, the permit revision will establish a maximum five-year

compliance schedule. During the compliance schedules, interim limits are included based on current treatment facility performance or on existing permit limits, whichever is more stringent to maintain existing water quality. The Board may take appropriate enforcement actions if interim limits and requirements are not met.

Table D: Summary of Feasibility Analysis

CONSTITUENT	AMEL (ug/L)	MDEL (ug/L)	MEC (ug/L)	IS MEC > AMEL	FEASIBILITY TO COMPLY (Y/N)
Copper	2.4	5.8	14	Y	N
Lead	1.2	2.3	15	Y	N
Mercury	0.02	0.05	1.5	Y	N
Nickel	5.8	12	6	Y	N
Selenium	4.1	8.2	8	Y	N
Cyanide	0.5	1.0	10	Y	N

f) Copper – Further Discussion and Rationale for Interim Effluent Limitation: Interim effluent limitations are required for copper since the Discharger has demonstrated that the final average monthly limit calculated according to the SIP will be infeasible to meet. The SIP requires the interim numeric effluent limit for the pollutant be based on either current treatment facility performance, or on the previous Order's limitation, whichever is more stringent. Effluent data from 1999-2001 was considered in developing an interim concentration-based effluent limitation. The limited data (seven detected values of 12 samples) preclude any meaningful evaluation of current treatment performance for this parameter. In addition, the previous permit did not include an effluent limitation for copper. The Discharger shall collect additional effluent data, as required by the August 6, 2001 letter from the Board to all permittees. For most parameters, monthly monitoring is required. For copper, the Board is specifically requiring twice per month monitoring for one year, which is beyond the minimum provisions of the August 6, 2001 letter. This will provide sufficient data for the Board to evaluate treatment performance and develop interim limits, as necessary. The permit will be re-opened to include such interim limitations when established.

g) Lead – Further Discussion and Rationale for the Interim Effluent Limitation: Interim effluent limitations are required for lead since the Discharger has demonstrated that the final average monthly limit calculated according to the SIP will be infeasible to meet. Effluent data from 1999-2001 was considered in developing an interim concentration-based effluent limitation. The limited data (four detected values of 10 samples) preclude any meaningful evaluation of current treatment performance for this parameter. Therefore, the maximum daily effluent limit of 56 µg/L from the previous permit will serve as the interim limit.

h) Mercury - Further Discussion and Rationale for the Interim Effluent Limitation: Interim effluent concentration limitations are required for mercury since the Discharger has demonstrated that the final average monthly limit calculated according to the SIP will be infeasible to meet. Effluent data from 1999-2001 was considered in developing an interim concentration-based effluent limitation. The limited data (six detected values of 12 samples) preclude any meaningful evaluation of current treatment performance for this parameter. Therefore, the maximum daily effluent limit of 1 µg/L from the previous permit will serve as the interim limit.

To calculate mass-based interim limitations, the Staff generally perform a statistical analysis on both effluent flow and mercury concentration data to determine current mass loadings. However, the limited detected values preclude any statistical analysis of the concentration data. The interim limitation included in this Order is calculated based the 99th percentile effluent flow for 2000 and 2001, and the maximum effluent concentration from 1999-2001. The mass-based effluent limitation maintains current loadings until a TMDL is established and is consistent with state and federal antidegradation and anti-backsliding requirements. The final mass-based effluent limitation may be based on the WLA derived from the mercury TMDL.

i) Nickel - Further Discussion and Rationale for the Interim Effluent Limitation: Interim effluent concentration limitations are required for nickel since the Discharger has demonstrated that the final average monthly limit calculated according to the SIP will be infeasible to meet. Effluent data from 1999-2001 was considered in developing an interim concentration-based effluent limitation. The limited data (three detected values of 8 samples) preclude any meaningful evaluation of current treatment performance for this parameter. Therefore, the maximum daily effluent limit of 71 µg/L from the previous permit will serve as the interim limit.

j) Selenium - Further Discussion and Rationale for Interim Effluent Limitation: Interim effluent limitations are required for selenium since the Discharger has demonstrated that the final average monthly limit calculated according to the SIP will be infeasible to meet. Effluent data from 1999-2001 was considered in developing an interim concentration-based effluent limitation. The limited data (one detected value) preclude any meaningful evaluation of current treatment performance for this parameter. In addition, the previous permit did not include an effluent limitation for selenium. The Discharger shall collect additional effluent data, as required by the August 6, 2001 letter from the Board to all permittees. For most parameters, monthly monitoring is required. For selenium, the Board is specifically requiring twice per month monitoring for one year, which is beyond the minimum provisions of the August 6, 2001 letter. This will provide sufficient data for the Board to evaluate treatment performance and develop interim limits, as necessary. The permit will be re-opened to include such interim limitations when established.

k) Cyanide – Further Discussion and Rationale for the Interim Effluent Limitation: Since 1999, most of the reported levels of cyanide in the effluent have been less than a detection limit of 10 µg/L; only one sample was reported as detected, at 10 µg/L. The NTR contains a saltwater numeric cyanide WQC of 1 µg/L as a Criterion Continuous Concentration (CCC). This WQC is below the presently achievable reporting limit (between 3 - 5 µg/L). The first trigger of the RPA indicates cyanide has reasonable potential, and a numeric WQBEL is required. There were 12 samples collected throughout the Bay by the RMP in 1993. All were reported to be <1 µg/L. Ambient cyanide data are being collected as required by the August 6, 2001 letter. The final WQBEL will be recalculated based on additional ambient background information, and/or an updated objective for cyanide. Effluent data from 1999-2001 was considered to develop interim concentration-based effluent limitations. The limited data (one detected value) preclude any meaningful evaluation of current treatment performance for this parameter. The previous permit does not include a cyanide effluent limit. The Discharger shall collect additional effluent data, as required by the August 6, 2001 letter from the Board to all permittees. For most parameters including cyanide, monthly monitoring is required. This will provide sufficient data for the Board to evaluate treatment performance and develop interim limits, as necessary. The permit will be re-opened to include such interim limitations when established.

l) 4,4'DDE and Dieldrin – Further Discussion and Rationale for the Effluent Limitations: In the CTR, the lowest criteria are the human health values. Neither pesticide have been detected in the effluent, therefore the final WQBELs are based on the CTR criterion. Both are bioaccumulative and on the 303(d) list due to fish tissue concentrations (DDE due to its association with DDT), therefore no assimilative capacity, and no dilution credit were allowed in the final limit calculations. Compliance will be demonstrated by showing no detection above the SIP minimum levels. Because these pesticides have not been detected in the effluent, and there are no known sources at the operator's facility, this Order includes the final effluent limitations for 4,4'-DDE and dieldrin and no interim limit is necessary.

5. Basis for Receiving Water Limitations

a) Receiving water limitations C.1 and C.2 (conditions to be avoided): These limits are based on the previous Order and the narrative/numerical objectives contained in Chapter 3 of the Basin Plan, page 3-2 – 3-5.

b) Receiving water limitation C.3 (compliance with State Law): This requirement is in the previous permit, requires compliance with Federal and State law, and is self-explanatory.

6. Basis for Self-Monitoring Requirements

The SMP includes monitoring at the outfall for conventional, non-conventional, and toxic pollutants, and acute and chronic toxicity. For the most part, the monitoring is the same as required by the previous Order. The previous Order required weekly monitoring for influent settleable solids and TSS. Since the facility has consistently demonstrated that the lagoon system provides adequate settling and it is not a municipal wastewater treatment facility (which are required under Federal regulations to achieve specific TSS removal efficiencies), no influent TSS and settleable solids monitoring is required under this Order. Monthly monitoring is required for arsenic, lead, mercury and nickel since these parameters have been observed in the effluent and demonstrate RP. Monitoring for dieldrin is required to demonstrate compliance with the final effluent limits. Twice yearly monitoring for dieldrin is appropriate because it has not been detected in the effluent to date. Dioxin and furan monitoring are required because these pollutants are listed as causing impairment in Suisun Bay and are required to be sampled as per the SIP (Page 27-28), and August 6, 2001 letter. Previous monitoring for cadmium, chromium, cyanide, selenium, silver, zinc and "Table 1" parameters is replaced by more comprehensive monitoring as required by the August 6, 2001 Letter. This Order specifies that copper and selenium monitoring under the August 6, 2001 be performed at least twice per month to provide sufficient data to determine interim limits, as appropriate.

7. Basis for Provisions

a) Provisions D.1. (Permit Compliance and Rescission of Previous Permit): Time of compliance is based on 40 CFR 122. The basis of this Order superceding and rescinding the previous permit Order is 40 CFR 122.46.

b) Provision D.2. (Storm Water Pollution Prevention Plan): This provision, is based on and consistent with Basin Plan objectives, statewide storm water requirements for industrial facilities, and applicable USEPA regulations.

c) Provision D.3. (Cyanide Study and Schedule): This provision, based on BPJ, requires the discharger to characterize background ambient cyanide concentrations and to participate in an on-going group effort to update the water quality objective for cyanide.

d) Provision D.4. (Effluent Characterization for Selected Constituents): This provision establishes monitoring requirements as stated in the Board's August 6, 2001 Letter under Effluent Monitoring for major Dischargers. The Discharger's monitoring program developed under the August 6, 2001 letter shall specifically include at least twice monthly monitoring for copper and selenium. Interim and final reports shall be submitted to the Board in accordance with the schedule specified in the August 6, 2001 Letter). This provision is based on the Basin Plan and the SIP.

e) Provision D.5. (Selenium and Copper Interim Effluent Limitations): This provision, based on BPJ and SIP requirements, indicates that the Board will re-open the permit to include interim effluent limitations for selenium and copper and these limits will remain in effect until June 30, 2007.

f) Provision D.6. (Pollutant Prevention and Minimization Program): This provision is based on the Basin Plan, page 4-25 – 4-28, and the SIP, Section 2.1, Compliance Schedules.

g) Provision D.7. (Whole Effluent Acute Toxicity): This provision establishes conditions by which compliance with permit effluent limits for acute toxicity will be demonstrated. Conditions include the use of 96-hour static renewal bioassays, the use of fathead minnows and three-spine stickleback as the test species, and use of approved test methods as specified. On April 1, 2003, the Discharger shall switch from 3rd to 4th Edition EPA protocol. These conditions are based on the effluent limits for acute toxicity given in the Basin Plan, Chapter 4, and BPJ.

h) Provision D.8. (Whole Effluent Chronic Toxicity): This provision establishes conditions and protocol by which compliance with the Basin Plan narrative WQO for toxicity will be demonstrated. Conditions include required monitoring and evaluation of the effluent for chronic toxicity and numerical values for chronic toxicity evaluation to be used as 'triggers' for initiating accelerated monitoring and toxicity reduction evaluation(s). These conditions apply to the discharges to Suisun Bay and the numerical values for chronic toxicity evaluation are based on a minimum initial dilution ratio of 10:1. This provision also requires the Discharger to conduct a screening phase monitoring requirement and implement toxicity identification and reduction evaluations when there is consistent chronic toxicity in the discharge. New testing species and/or test methodology may be available before the next permit renewal. Characteristics, and thus toxicity, of the process wastewater may also have been changed during the life of the permit. This screening phase monitoring is important to help determine which test species is most sensitive to the toxicity of the effluent for future compliance monitoring. The proposed conditions in the draft permit for chronic toxicity are based on the Basin Plan narrative WQO for toxicity, Basin Plan effluent limits for chronic toxicity (Basin Plan, Chapter 4), USEPA and SWRCB Task Force guidance, applicable federal regulations [40 CFR 122.44(d)(1)(v)], and BPJ.

i) Provision D.9. (Optional Mass Offset): This option is provided to encourage the Discharger to implement aggressive reduction of mass loads to the receiving water and Suisun Bay.

j) Provision D.10. (Contingency Plan, Review, and Status Reports) and D.11. (Annual Reports): The Contingency Plan and associated Annual Reporting provisions are based on the requirements stipulated in Board Resolution No. 74-10.

k) Provision D.12. (303(d)-listed Pollutants Site-Specific Objective and TMDL Status Review): This provision requires participation in the development of a TMDL or SSO for copper, nickel, mercury, selenium, and dieldrin. By January 31 of each year, the Discharger shall submit an update to the Board to document progress made on source control and pollutant minimization measures and development of TMDL or SSO. Regional Board staff shall review the status of TMDL development. This Order may be reopened in the future to reflect any changes required by TMDL development.

l) Provision D.13. (Self-Monitoring Program): The Discharger is required to conduct monitoring of the permitted discharges in order to evaluate compliance with permit conditions. Monitoring requirements are given in the Self Monitoring Program (SMP) of the Permit. This provision requires compliance with the SMP, and is based on 40 CFR 122.44(i), 122.62, 122.63 and 124.5. The SMP is a standard requirement in almost all NPDES permits (including the Order) issued by the Board. In addition to containing definitions of terms, it specifies general sampling/analytical protocols and the requirements of reporting of spills, violations, and routine monitoring data in accordance with NPDES regulations, the California Water Code, and Board's policies. The SMP also contains sampling program specific for the Discharger's facility. It defines the sampling stations and frequency, pollutants to be monitored, and additional reporting requirements. Pollutants to be monitored include all parameters for which effluent limitations are specified.

m) Provision D.14. (Standard Provisions and Reporting Requirements): The purpose of this provision is require compliance with the standard provisions and reporting requirements given in this Board's document titled, Standard Provisions and Reporting Requirements for NPDES Surface Water Discharge Permits, August 1993, or any amendments thereafter. This document is included as part of the permit as an attachment of the permit. Where provisions or reporting requirements specified in the permit are different from equivalent or related provisions or reporting requirements given in 'Standard Provisions', the specifications given in the permit shall apply. The standard provisions and reporting requirements given in the above document are based on various state and federal regulations with specific references cited therein.

n) Provision D.15. (Change in Control or Ownership): This provision is based on 40 CFR 122.61.

o) Provision D.16. (Permit Reopener): This provision is based on 40 CFR 123.

p) Provision D.17. (NPDES Permit /USEPA concurrence): This provision is based on 40 CFR 123.

q) Provision D.18. (Permit Expiration and Reapplication): This provision is based on 40 CFR 122.46 (a).

V. WRITTEN COMMENTS

- Interested persons are invited to submit written comments concerning this draft permit.
- Comments should be submitted to the Board no later than **5:00 P.M. on June 2, 2002.**
- Comments received after this date may not receive full consideration in the formulation of final determinations of permit conditions.
- Comments should be submitted to the Board at the address given on the first page of this fact sheet, and addressed to the attention of: Ms. Lila Tang.

VI. PUBLIC HEARING

- The draft permit will be considered for adoption by the Board at a public hearing during the Board's regular monthly meeting to be held on: June 19, 2002, **starting at 9:00 a.m.**

- This meeting will be held at:
  Main Floor Auditorium
  Elihu Harris State Office Building,
  1515 Clay Street, Oakland, California

VII. WASTE DISCHARGE REQUIREMENT APPEALS

Any person may petition the State Water Resources Control Board to review the decision of the Board regarding the Waste Discharge Requirements. A petition must be made within 30 days of the Board public hearing.

VIII. ADDITIONAL INFORMATION

For additional information about this matter, interested persons should contact the following Regional Board staff member: Ms. Lila Tang, Phone number: (510) 622-2425, or by email at Lwt@rb2.swrcb.ca.gov.

Attachments:
RPA Results for Priority Pollutants
WQBEL Calculations
Interim Limit Calculations
Background Data Tables

Reasonable Potential Analysis, Steps in SIP, Section 1.3
(General Chemical Corporation, NPDES No. CA0004979)

Beginning		Step 1														Step 2	Step 3			Step 4
		Basin Plan Objectives (ug/L)- Regional Board 2								CTR Water Quality Criteria (ug/L)					C (µg/L)		MinDL (µg/L)		MEC (µg/L)	MEC vs. C
		from Table 4-3	Freshwater (from Table 3-4)				Saltwater (from Table 3-3)				Freshwater		Saltwater					All non-Detected?		
	Constituent name	Deep Water (24-hr)	4-day	1-hr	24-hr	Max	4-day	1-hr	24-hr	Max	CMC	CCC	CMC	CCC	Organisms only	Lowest (most stringent) Criteria [e]	Number of data points	Minimum Detection Limit		Maximum Pollutant Concentration from the effluent	1. If MEC> or =C, effluent limitation is required; 2. If MEC<C, go to Step 5
1	Antimony														4,300	4,300	1	5	Y	5	MEC<C, go to Step 5
2	Arsenic [b]	200	190	360			36	69			340	150	69	36		36	10		N	110	**MEC>C, Effluent Limit required**
3	Beryllium															No criteria	1		Y		No criteria
4	Cadmium [b]	30.0	0.70	1.90			9.3	43			1.10	0.20	42.25	9.36		0.70	16	2	Y	2	Min DL>C, go to Step 5
5a	Chromium (III)										1016.4	121.2				121.2					No data, go to Step 5
5b	Chromium (VI) [b]	110	11	16			50	1,100			16.3	11.4	1107.8	50.4		11.0	9	5	Y	5	MEC<C, go to Step 5
6	Copper (303d listed) [c]	200	6.76	9.57							7.6	5.3	5.8	3.7		3.7	16.0	0.007	N	14	**MEC>C, Effluent Limit required**
7	Lead [b]	56	1.4	35.5			5.6	140			35.50	1.40	220.82	8.52		1.4	10	5	N	15	**MEC>C, Effluent Limit required**
8	Mercury (303d listed) [b]	1	0.025	2.4			0.025	2.1							0.051	0.025	16	0.002	N	1.5	**MEC>C, Effluent Limit required**
9	Nickel [b]	71	90.7	815.6	56	1,100			7.1	140	269.80	30.00	74.75	8.28	4,600	7.1	10	5	N	6	MEC<C, go to Step 5
10	Selenium (303d listed) [b]										20	5	20.0	5.0		5.0	1	8	N	8	**MEC>C, Effluent Limit required**
11	Silver [b]	23				4.06				2.3	1.30		2.24			2.3	10	5	Y	5	Min DL>C, go to Step 5
12	Thallium														6.3	6.3	1	5	Y	5	MEC<C, go to Step 5
13	Zinc [b]	580	60.90	67.24	58	170			58	170	68.80	68.80	95.14	85.62		58.0	10	10	N	54	MEC<C, go to Step 5
14	Cyanide [b]	25									22	5	1	1	220,000	1.0	10	10	N	10	**MEC>C, Effluent Limit required**
15	Asbestos															No criteria					No criteria
16	2,3,7,8 TCDD (303d listed)														0.000000014	0.000000014	1	0.00000226	Y		Min DL>C, go to Step 5
17	Acrolein														780	780	1	10	Y	10	MEC<C, go to Step 5
18	Acrylonitrile														0.66	0.66	1	10	Y		Min DL>C, go to Step 5
19	Benzene														71	71	1	1	Y	1	MEC<C, go to Step 5
20	Bromoform														360	360	1	1	Y	1	MEC<C, go to Step 5
21	Carbon Tetrachloride														4.4	4.4	1	1	Y	1	MEC<C, go to Step 5
22	Chlorobenzene														21,000	21,000	1	1	Y	1	MEC<C, go to Step 5
23	Chlorodibromomethane														34	34.0	1	1	Y	1	MEC<C, go to Step 5
24	Chloroethane															No criteria	1	1	Y		No criteria
25	2-Chloroethylvinyl ether															No criteria	1	2	Y		No criteria
26	Chloroform															No criteria	1	1	Y		No criteria
27	Dichlorobromomethane														46	46.0	1	1	Y	1	MEC<C, go to Step 5
28	1,1-Dichloroethane															No criteria	1	1	Y		No criteria
29	1,2-Dichloroethane														99	99.0	1	1	Y	1	MEC<C, go to Step 5
30	1,1-Dichloroethylene														3.2	3.2	1	1	Y	1	MEC<C, go to Step 5
31	1,2-Dichloropropane														39	39	1	1	Y	1	MEC<C, go to Step 5
32	1,3-Dichloropropylene														1,700	1,700	1	1	Y	1	MEC<C, go to Step 5
33	Ethylbenzene														29,000	29,000	1	1	Y	1	MEC<C, go to Step 5
34	Methyl Bromide														4,000	4,000	1	1	Y	1	No data, go to Step 5
35	Methyl Chloride															No criteria	1	1	Y		No criteria
36	Methylene Chloride														1,600	1,600	1	4	Y	4	MEC<C, go to Step 5
37	1,1,2,2-Tetrachloroethane														11	11	1	1	Y	1	MEC<C, go to Step 5
38	Tetrachloroethylene														8.85	8.9	1	1	Y	1	MEC<C, go to Step 5
39	Toluene														200,000	200,000	1	1	Y	1	MEC<C, go to Step 5
40	1,2-Trans-Dichloroethylene														140,000	140,000	1	1	Y	1	MEC<C, go to Step 5
41	1,1,1-Trichloroethane															No criteria	1	1	Y		No criteria
42	1,1,2-Trichloroethane														42	42	1	1	Y	1	MEC<C, go to Step 5
43	Trichloroethylene														81	81	1	1	Y	1	MEC<C, go to Step 5
44	Vinyl Chloride														525	525	1	1	Y	1	MEC<C, go to Step 5
45	2-Chlorophenol														400	400	1	2	Y	2	MEC<C, go to Step 5
46	2,4-Dichlorophenol														790	790	1	2	Y	2	MEC<C, go to Step 5
47	2,4-Dimethylphenol														2,300	2,300	1	2	Y	2	MEC<C, go to Step 5
48	2-Methyl- 4,6-Dinitrophenol														765	765	1	10	Y	10	MEC<C, go to Step 5
49	2,4-Dinitrophenol														14,000	14,000	1	10	Y	10	MEC<C, go to Step 5
50	2-Nitrophenol															No criteria	1	2	Y		No criteria
51	4-Nitrophenol															No criteria	1	10	Y		No criteria
52	3-Methyl 4-Chlorophenol															No criteria	1	5	Y		No criteria
53	Pentachlorophenol										19	15	13	7.9	8.2	7.9	1	10	Y		Min DL>C, go to Step 5

Beginning		Step 1															Step 2	Step 3			Step 4
		Basin Plan Objectives (ug/L)- Regional Board 2									CTR Water Quality Criteria (ug/L)					C (µg/L)		MinDL (µg/L)		MEC (µg/L)	MEC vs. C
		from Table 4-3	Freshwater (from Table 3-4)				Saltwater (from Table 3-3)				Freshwater		Saltwater						All non-Detected?		
	Constituent name	Deep Water (24-hr)	4-day	1-hr	24-hr	Max	4-day	1-hr	24-hr	Max	CMC	CCC	CMC	CCC	Organisms only	Lowest (most stringent) Criteria *	Number of data points	Minimum Detection Limit		Maximum Pollutant Concentration from the effluent	1. If MEC> or =C, effluent limitation is required; 2. If MEC<C, go to Step 5
54	Phenol	500													4,600,000	500	1	2	Y	2	MEC<C, go to Step 5
55	2,4,6-Trichlorophenol														6.5	6.5	1	2	Y	2	MEC<C, go to Step 5
56	Acenaphthene														2,700	2,700	1	2	Y	2	MEC<C, go to Step 5
57	Acenaphthylene															No criteria	1	2	Y		No criteria
58	Anthracene														110,000	110,000	1	2	Y	2	MEC<C, go to Step 5
59	Benzidine														0.00054	0.00054	1	5	Y		Min DL>C, go to Step 5
60	Benzo(a)Anthracene														0.049	0.049	1	2	Y		Min DL>C, go to Step 5
61	Benzo(a)Pyrene														0.049	0.049	1	2	Y		Min DL>C, go to Step 5
62	Benzo(b)Fluoranthene														0.049	0.049	1	2	Y		Min DL>C, go to Step 5
63	Benzo(ghi)Perylene															No criteria	1	2	Y		No criteria
64	Benzo(k)Fluoranthene														0.049	0.049	1	2	Y		Min DL>C, go to Step 5
65	Bis(2-Chloroethoxy)Methane															No criteria	1	5	Y		No criteria
66	Bis(2-Chloroethyl)Ether														1.4	1.4	1	2	Y		Min DL>C, go to Step 5
67	Bis(2-Chloroisopropyl)Ether														170,000	170,000	1	2	Y	2	MEC<C, go to Step 5
68	Bis(2-Ethylhexyl)Phthalate														5.9	5.9	1	5	Y	5	MEC<C, go to Step 5
69	4-Bromophenyl Phenyl Ether															No criteria	1	5	Y		No criteria
70	Butylbenzyl Phthalate														5,200	5,200	1	5	Y	5	MEC<C, go to Step 5
71	2-Chloronaphthalene														4,300	4,300	1	2	Y	2	MEC<C, go to Step 5
72	4-Chlorophenyl Phenyl Ether															No criteria	1	2	Y		No criteria
73	Chrysene														0.049	0.049	1	2	Y		Min DL>C, go to Step 5
74	Dibenzo(a,h)Anthracene														0.049	0.049	1	2	Y		Min DL>C, go to Step 5
75	1,2-Dichlorobenzene														17,000	17,000	1	2	Y	2	MEC<C, go to Step 5
76	1,3-Dichlorobenzene														2,600	2,600	1	2	Y	2	MEC<C, go to Step 5
77	1,4-Dichlorobenzene														2,600	2,600	1	2	Y	2	MEC<C, go to Step 5
78	3,3 Dichlorobenzidine														0.077	0.077	1	5	Y		Min DL>C, go to Step 5
79	Diethyl Phthalate														120,000	120,000	1	5	Y	5	MEC<C, go to Step 5
80	Dimethyl Phthalate														2,900,000	2,900,000	1	5	Y	5	MEC<C, go to Step 5
81	Di-n-Butyl Phthalate														12,000	12,000	1	5	Y	5	MEC<C, go to Step 5
82	2,4-Dinitrotoluene														9.1	9.1	1	2	Y	2	MEC<C, go to Step 5
83	2,6-Dinitrotoluene															No criteria	1	5	Y		No criteria
84	Di-n-Octyl Phthalate															No criteria	1	5	Y		No criteria
85	1,2-Diphenylhydrazine														0.54	0.54	1	5	Y		Min DL>C, go to Step 5
86	Fluoranthene														370	370	1	2	Y	2	MEC<C, go to Step 5
87	Fluorene														14,000	14,000	1	5	Y	5	MEC<C, go to Step 5
88	Hexachlorobenzene														0.00077	0.00077	1	2	Y	2	Min DL>C, go to Step 5
89	Hexachlorobutadiene														50	50	1	2	Y	2	MEC<C, go to Step 5
90	Hexachlorocyclopentadiene														17,000	17,000	1	2	Y	2	MEC<C, go to Step 5
91	Hexachloroethane														8.9	8.9	1	2	Y	2	MEC<C, go to Step 5
92	Indeno(1,2,3-cd)Pyrene														0.049	0.049	1	2	Y	2	Min DL>C, go to Step 5
93	Isophorone														600	600	1	2	Y	2	MEC<C, go to Step 5
94	Naphthalene															No criteria	1	2.1	N		No criteria
95	Nitrobenzene														1,900	1,900	1	2	Y	2	MEC<C, go to Step 5
96	N-Nitrosodimethylamine														8.1	8.1	1	2	Y	2	MEC<C, go to Step 5
97	N-Nitrosodi-n-Propylamine														1.4	1.4	1	2	Y	2	Min DL>C, go to Step 5
98	N-Nitrosodiphenylamine														16	16	1	2	Y	2	MEC<C, go to Step 5
99	Phenanthrene															No criteria	1	2	Y	2	No criteria
100	Pyrene														11,000	11,000	1	2	Y	2	MEC<C, go to Step 5
101	1,2,4-Trichlorobenzene															No criteria	1	2	Y	2	No criteria
102	Aldrin										3		1.3		0.00014	0.00014	1	0.08	Y		Min DL>C, go to Step 5
103	alpha-BHC														0.013	0.013	1	0.06	Y		Min DL>C, go to Step 5
104	beta-BHC														0.046	0.046	1	0.06	Y		Min DL>C, go to Step 5
105	gamma-BHC										0.95		0.16		0.063	0.063	1	0.06	Y	0.06	MEC<C, go to Step 5
106	delta-BHC															No criteria	1	0.06	Y		No criteria
107	Chlordane (303d listed)										2.4	0.0043	0.09	0.004	0.00059	0.00059	1	1	Y		Min DL>C, go to Step 5
108	4,4'-DDT (303d listed)										1.1	0.001	0.13	0.001	0.00059	0.00059	1	0.2	Y		Min DL>C, go to Step 5
109	4,4'-DDE (linked to DDT)														0.00059	0.00059	1	0.08	Y		Min DL>C, go to Step 5

Beginning		Step 1														Step 2	Step 3			Step 4
		Basin Plan Objectives (ug/L)- Regional Board 2									CTR Water Quality Criteria (ug/L)					C (µg/L)		MinDL (µg/L)		MEC (µg/L)	MEC vs. C
		from Table 4-3	Freshwater (from Table 3-4)				Saltwater (from Table 3-3)				Freshwater		Saltwater						All non-Detected?		
	Constituent name	Deep Water (24-hr)	4-day	1-hr	24-hr	Max	4-day	1-hr	24-hr	Max	CMC	CCC	CMC	CCC	Organisms only	Lowest (most stringent) Criteria a	Number of data points	Minimum Detection Limit		Maximum Pollutant Concentration from the effluent	1. If MEC> or =C, effluent limitation is required; 2. If MEC<C, go to Step 5
110	4,4'-DDD														0.00084	0.00084	1	0.1	Y		Min DL>C, go to Step 5
111	Dieldrin (303d listed)										0.24	0.056	0.71	0.0019	0.00014	0.00014	1	0.06	Y		Min DL>C, go to Step 5
112	alpha-Endosulfan										0.22	0.056	0.034	0.0087	240	0.0087	1	0.1	Y		Min DL>C, go to Step 5
113	beta-Endolsulfan										0.22	0.056	0.034	0.0087	240	0.0087	1	0.1	Y		Min DL>C, go to Step 5
114	Endosulfan Sulfate														240	240	1	0.2	Y	0.2	MEC<C, go to Step 5
115	Endrin										0.086	0.036	0.037	0.0023	0.81	0.0023	1	0.4	Y		Min DL>C, go to Step 5
116	Endrin Aldehyde														0.81	0.81	1	0.2	Y	0.2	MEC<C, go to Step 5
117	Heptachlor										0.52	0.0038	0.053	0.0036	0.00021	0.00021	1	0.06	Y		Min DL>C, go to Step 5
118	Heptachlor Epoxide										0.52	0.0038	0.053	0.0036	0.00011	0.00011	1	0.1	Y		Min DL>C, go to Step 5
119	Aroclor 1016 (303d listed)											0.014		0.03	0.00017	0.00017	1	0.5	Y		Min DL>C, go to Step 5
120	Aroclor 1242 (303d listed)																1	0.5			
121	Aroclor 1254 (303d listed)																	0.5			
122	Aroclor 1221 (303d listed)																	0.5			
123	Aroclor 1232 (303d listed)																	0.5			
124	Aroclor 1248 (303d listed)																	0.5			
125	Aroclor 1260 (303d listed)																	0.5			
126	Toxaphene										0.73	0.0002	0.21	0.0002	0.00075	0.0002		1	Y		Min DL>C, go to Step 5

a. The most stringent of salt and fresh water criteria were selected for this analysis.

b. According to Table 1 of Section (b)(1) of CTR (40CFR 131.38), those criteria should use Basin Plan objectives; criteria for Se and CN are specified by the NTR.

c. Criteria for copper is taken from CTR. CTR criteria for copper is expressed as dissolved metals. The copper criter in the table is adjusted by dividing a factor of 0.83 to convert the dissovled to total metal concetration. The criteria for Selenium is taken from NTR.

d. Acronyms in the "Final Result" column:

CD: Cannot determine reasonable potential due to the absence of data, or because Minimum DL is greater than water quality objective or CTR criteria
IM: Interim monitoring is required
N: No reasonable potential
Y: Has reasonable potential
DL: Detection limit above water quality objective or CTR criteria
Y(B): Reasonable potential due to ambient data exceedances

Beginning		Step 5	Step 6	Final Result [d]	All Available Monitoring Data															
		B (µg/L)	B vs. C																	
					2001				2000				1999				1998			
	Constituent name	Maximum Ambient Background Concentration	If B>C, effluent limitation is required		4Q	3Q	2Q	1Q	4Q	Selected 3Q	2Q	1Q	4Q	3Q	2Q	1Q	4Q	3Q	2Q	1Q
1	Antimony	No RMP data, Step 7	No ambient data, to Step 7	N						<5										
2	Arsenic [b]	3.65	**Effluent Limit required**	Y	110	110	37	37	71			40	85		52		62		29	
3	Beryllium	No RMP data, Step 7	No criteria	No criteria						<5										
4	Cadmium [b]	0.06	B<C, Step 7	CD	<2	<2	<2	<2; <2	<2		<2	<2	<2	<2	<2	<2	<2	<2	< 10	<2
5a	Chromium (III)	No RMP data, Step 7	No ambient data, to Step 7	No criteria																
5b	Chromium (VI) [b]	No RMP data, Step 7	No ambient data, to Step 7	N	**<5**	<5	<5	<5	<5				<5		<5		<5		<5	
6	Copper (303d listed) [c]	9.9	**MEC, B>C, Effluent Limit required**	Y	6.5	<5	<5	0.3; 0.3	6.3		11	**14**	<5	<5	<5	6	22.0	6.1	< 10	11.0
7	Lead [b]	2.35 [y]	**MEC, B>C, Effluent Limit required**	Y	**15**	<5	<5	<5	8.0			<5	5.0		<5		9.0		<5	
8	Mercury (303d listed) [b]	0.0377	**MEC, B>C, Effluent Limit required**	Y	**1.5**	0.58	0.55	<0.2;<0.2	<0.2		0.2	<0.2	0.2	0.4	<0.2	<0.2	<0.2	<0.2	0.5	<0.2
9	Nickel [b]	21.8	**B>C, Effluent Limit required**	Y(B)	<5	<5	5.5	5.5	<5			**6**	<5		<5		<5		10.0	
10	Selenium (303d listed) [b]	0.3	**Effluent Limit required**	Y						**8.0**										
11	Silver [b]	0.0566	B<C, Step 7	CD	**<5**	<5	<5	<5	<5			<5	<5		<5		<5		<5	
12	Thallium	No RMP data, Step 7	No ambient data, to Step 7	N						<5										
13	Zinc [b]	18.2	B<C, Step 7	N	11	11	32	32	<10			35	<10		**54.0**		25.0		140.0	
14	Cyanide [b]	No RMP data, Step 7	**Effluent Limit required**	Y	<10	<10	<10	<10	<10			<10	<10		**10.0**		<10		<10	
15	Asbestos	No RMP data, Step 7	No criteria	No criteria																
16	2,3,7,8 TCDD (303d listed)	No RMP data, Step 7	No ambient data, to Step 7	CD						ND (or <2.26?)										
17	Acrolein	No RMP data, Step 7	No ambient data, to Step 7	N						<10										
18	Acrylonitrile	No RMP data, Step 7	No ambient data, to Step 7	CD						<10										
19	Benzene	No RMP data, Step 7	No ambient data, to Step 7	N						<1										
20	Bromoform	No RMP data, Step 7	No ambient data, to Step 7	N						<1										
21	Carbon Tetrachloride	No RMP data, Step 7	No ambient data, to Step 7	N						<1										
22	Chlorobenzene	No RMP data, Step 7	No ambient data, to Step 7	N						<1										
23	Chlorodibromomethane	No RMP data, Step 7	No ambient data, to Step 7	N						<1										
24	Chloroethane	No RMP data, Step 7	No criteria	No criteria						<1										
25	2-Chloroethylvinyl ether	No RMP data, Step 7	No criteria	No criteria						<2										
26	Chloroform	No RMP data, Step 7	No criteria	No criteria						<1										
27	Dichlorobromomethane	No RMP data, Step 7	No ambient data, to Step 7	N						<1										
28	1,1-Dichloroethane	No RMP data, Step 7	No criteria	No criteria						<1										
29	1,2-Dichloroethane	No RMP data, Step 7	No ambient data, to Step 7	N						<1										
30	1,1-Dichloroethylene	No RMP data, Step 7	No ambient data, to Step 7	N						<1										
31	1,2-Dichloropropane	No RMP data, Step 7	No ambient data, to Step 7	N						<1										
32	1,3-Dichloropropylene	No RMP data, Step 7	No ambient data, to Step 7	N						<1										
33	Ethylbenzene	No RMP data, Step 7	No ambient data, to Step 7	N						<1										
34	Methyl Bromide	No RMP data, Step 7	No ambient data, to Step 7	N						<1										
35	Methyl Chloride	No RMP data, Step 7	No criteria	No criteria						<1										
36	Methylene Chloride	No RMP data, Step 7	No ambient data, to Step 7	N						<4										
37	1,1,2,2-Tetrachloroethane	No RMP data, Step 7	No ambient data, to Step 7	N						<1										
38	Tetrachloroethylene	No RMP data, Step 7	No ambient data, to Step 7	N						<1										
39	Toluene	No RMP data, Step 7	No ambient data, to Step 7	N						<1										
40	1,2-Trans-Dichloroethylene	No RMP data, Step 7	No ambient data, to Step 7	N						<1										
41	1,1,1-Trichloroethane	No RMP data, Step 7	No criteria	No criteria						<1										
42	1,1,2-Trichloroethane	No RMP data, Step 7	No ambient data, to Step 7	N						<1										
43	Trichloroethylene	No RMP data, Step 7	No ambient data, to Step 7	N						<1										
44	Vinyl Chloride	No RMP data, Step 7	No ambient data, to Step 7	N						<1										
45	2-Chlorophenol	No RMP data, Step 7	No ambient data, to Step 7	N						<2										
46	2,4-Dichlorophenol	No RMP data, Step 7	No ambient data, to Step 7	N						<2										
47	2,4-Dimethylphenol	No RMP data, Step 7	No ambient data, to Step 7	N						<2										
48	2-Methyl- 4,6-Dinitrophenol	No RMP data, Step 7	No ambient data, to Step 7	N						<10										
49	2,4-Dinitrophenol	No RMP data, Step 7	No ambient data, to Step 7	N						<10										
50	2-Nitrophenol	No RMP data, Step 7	No criteria	No criteria						<2										
51	4-Nitrophenol	No RMP data, Step 7	No criteria	No criteria						<10										
52	3-Methyl 4-Chlorophenol	No RMP data, Step 7	No criteria	No criteria						<5										
53	Pentachlorophenol	No RMP data, Step 7	No ambient data, to Step 7	CD						<10										

Beginning		Step 5	Step 6	Final Result [4]	All Available Monitoring Data															
		B (µg/L)	B vs. C																	
					2001				2000				1999				1998			
	Constituent name	Maximum Ambient Background Concentration	If B>C, effluent limitation is required		4Q	3Q	2Q	1Q	4Q	Selected 3Q	2Q	1Q	4Q	3Q	2Q	1Q	4Q	3Q	2Q	1Q
54	Phenol	No RMP data, Step 7	No ambient data, to Step 7	N						<2										
55	2,4,6-Trichlorophenol	No RMP data, Step 7	No ambient data, to Step 7	N						<2										
56	Acenaphthene	0.005	B<C, Step 7	N						<2										
57	Acenaphthylene	No RMP data, Step 7	No criteria	No criteria						<2										
58	Anthracene	0.0058	B<C, Step 7	N						<2										
59	Benzidine	No RMP data, Step 7	No ambient data, to Step 7	CD						**<5**										
60	Benzo(a)Anthracene	0.0011	B<C, Step 7	CD						<2										
61	Benzo(a)Pyrene	0.00032	B<C, Step 7	CD						<2										
62	Benzo(b)Fluoranthene	0.0019	B<C, Step 7	CD						<2										
63	Benzo(ghi)Perylene	0.00062	No criteria	No criteria						<2										
64	Benzo(k)Fluoranthene	0.00093	B<C, Step 7	CD						<2										
65	Bis(2-Chloroethoxy)Methane	No RMP data, Step 7	No criteria	No criteria						<5										
66	Bis(2-Chloroethyl)Ether	No RMP data, Step 7	No ambient data, to Step 7	CD						<2										
67	Bis(2-Chloroisopropyl)Ether	No RMP data, Step 7	No ambient data, to Step 7	N						<2										
68	Bis(2-Ethylhexyl)Phthalate	No RMP data, Step 7	No ambient data, to Step 7	N						<5										
69	4-Bromophenyl Phenyl Ether	No RMP data, Step 7	No criteria	No criteria						<5										
70	Butylbenzyl Phthalate	No RMP data, Step 7	No ambient data, to Step 7	N						**<5**										
71	2-Chloronaphthalene	No RMP data, Step 7	No ambient data, to Step 7	N						<2										
72	4-Chlorophenyl Phenyl Ether	No RMP data, Step 7	No criteria	No criteria						<2										
73	Chrysene	0.001	B<C, Step 7	CD						<2										
74	Dibenzo(a,h)Anthracene	0.00067	B<C, Step 7	CD						<2										
75	1,2-Dichlorobenzene	No RMP data, Step 7	No ambient data, to Step 7	N						<2										
76	1,3-Dichlorobenzene	No RMP data, Step 7	No ambient data, to Step 7	N						<2										
77	1,4-Dichlorobenzene	No RMP data, Step 7	No ambient data, to Step 7	N						<2										
78	3,3 Dichlorobenzidine	No RMP data, Step 7	No ambient data, to Step 7	CD						<5										
79	Diethyl Phthalate	No RMP data, Step 7	No ambient data, to Step 7	N						<5										
80	Dimethyl Phthalate	No RMP data, Step 7	No ambient data, to Step 7	N						<5										
81	Di-n-Butyl Phthalate	No RMP data, Step 7	No ambient data, to Step 7	N						<5										
82	2,4-Dinitrotoluene	No RMP data, Step 7	No ambient data, to Step 7	N						<2										
83	2,6-Dinitrotoluene	No RMP data, Step 7	No criteria	No criteria						<5										
84	Di-n-Octyl Phthalate	No RMP data, Step 7	No criteria	No criteria						<5										
85	1,2-Diphenylhydrazine	No RMP data, Step 7	No ambient data, to Step 7	CD						**<5**										
86	Fluoranthene	0.003	B<C, Step 7	N						<2										
87	Fluorene	0.0021	B<C, Step 7	N						<5										
88	Hexachlorobenzene	0.000053	B<C, Step 7	CD						<2										
89	Hexachlorobutadiene	No RMP data, Step 7	No ambient data, to Step 7	N						<2										
90	Hexachlorocyclopentadiene	No RMP data, Step 7	No ambient data, to Step 7	N						<2										
91	Hexachloroethane	No RMP data, Step 7	No ambient data, to Step 7	N						<2										
92	Indeno(1,2,3-cd)Pyrene	0.0013	B<C, Step 7	CD						<2										
93	Isophorone	No RMP data, Step 7	No ambient data, to Step 7	N						<2										
94	Naphthalene	0.0028	B<C, Step 7	No criteria						2.1										
95	Nitrobenzene	No RMP data, Step 7	No ambient data, to Step 7	N						<2										
96	N-Nitrosodimethylamine	No RMP data, Step 7	No ambient data, to Step 7	N						<2										
97	N-Nitrosodi-n-Propylamine	No RMP data, Step 7	No ambient data, to Step 7	CD						<2										
98	N-Nitrosodiphenylamine	No RMP data, Step 7	No ambient data, to Step 7	N						<2										
99	Phenanthrene	0.0041	No criteria	No criteria						<2										
100	Pyrene	0.0025	B<C, Step 7	N						<2										
101	1,2,4-Trichlorobenzene	No RMP data, Step 7	No criteria	No criteria						<2										
102	Aldrin	No RMP data, Step 7	No ambient data, to Step 7	CD						<0.08										
103	alpha-BHC	No RMP data, Step 7	No ambient data, to Step 7	CD						<0.06										
104	beta-BHC	No RMP data, Step 7	No ambient data, to Step 7	CD						<0.06										
105	gamma-BHC	No RMP data, Step 7	No ambient data, to Step 7	N						<0.06										
106	delta-BHC	No RMP data, Step 7	No criteria	No criteria						<0.06										
107	Chlordane (303d listed)	0.000302	B<C, Step 7	CD						<1										
108	4,4'-DDT (303d listed)	No RMP data, Step 7	No ambient data, to Step 7	CD						<0.2										
109	4,4'-DDE (linked to DDT)	0.00092	**B>C, Effluent Limit required**	Y(B)						<0.08										

Beginning		Step 5	Step 6	Final Result [d]	All Available Monitoring Data															
		B (µg/L)	B vs. C																	
					2001				2000				1999				1998			
	Constituent name	Maximum Ambient Background Concentration	If B>C, effluent limitation is required		4Q	3Q	2Q	1Q	4Q	Selected 3Q	2Q	1Q	4Q	3Q	2Q	1Q	4Q	3Q	2Q	1Q
110	4,4'-DDD	No RMP data, Step 7	No ambient data, to Step 7	CD						<0.1										
111	Dieldrin (303d listed)	0.00038	**B>C, Effluent Limit required**	Y(B)						<0.06										
112	alpha-Endosulfan	0.000036	B<C, Step 7	CD						<0.1										
113	beta-Endolsulfan	0.000042	B<C, Step 7	CD						<0.1										
114	Endosulfan Sulfate	0.0002	B<C, Step 7	N						<0.2										
115	Endrin	0.000019	B<C, Step 7	CD						<0.4										
116	Endrin Aldehyde	No RMP data, Step 7	No ambient data, to Step 7	N						<0.2										
117	Heptachlor	No RMP data, Step 7	No ambient data, to Step 7	CD						<0.06										
118	Heptachlor Epoxide	0.000097	B<C, Step 7	CD						<0.1										
119	Aroclor 1016 (303d listed)	No RMP data, Step 7	No ambient data, to Step 7	CD						<0.5										
120	Aroclor 1242 (303d listed)	No RMP data, Step 7																		
121	Aroclor 1254 (303d listed)	No RMP data, Step 7																		
122	Aroclor 1221 (303d listed)	No RMP data, Step 7																		
123	Aroclor 1232 (303d listed)	No RMP data, Step 7																		
124	Aroclor 1248 (303d listed)	No RMP data, Step 7																		
125	Aroclor 1260 (303d listed)	No RMP data, Step 7																		
126	Toxaphene	No RMP data, Step 7	No ambient data, to Step 7	CD						<1										

a. The most stringent of salt and fresh wa
b. According to Table 1 of Section (b)(1)
c. Criteria for copper is taken from CTR.
The criteria for Selenium is taken from
d. Acronyms in the "Final Result" column:

General Chemical Final WQBEL Calculations

Based on Hardness of 52 mg/L $CaCO_3$ (Honker Bay RMP Data 1993-2000)

PRIORITY POLLUTANTS		Copper	Lead	Mercury	Nickel	Selenium	Cyanide	4,4'-DDE	Dieldrin
Basis and Criteria type	use	CTR SW	BP FW (4-d, 1-hr)	BP sw(4-d, 1-hr avg)	BP SW (24-hr, Inst. Max.)	NTR	NTR	CTR HH	CTR HH
Lowest WQO (for metals - use total metals)		3.7	1.4	0.025	7.100	5.0	1.0	0.00059	0.00014
Dilution Factor (D) (if applicable)		9	9	0	9	0	9	0	0
no. of samples per month									
Applicable Acute WQO (for metals - use total metals)		5.8	35.5	2.1	140.0	20.0	1	0.00059	0.00014
Applicable Chronic WQO(for metals - use total metals)		3.7	1.4	0.025	7.100	5.0	1	0.00059	0.00014
Background (for metals - use total metals)		9.9	2.35	0.0377	21.8	0.3			
Avg bckgrnd (for HH criteria only)								0.0003648	0.0001418
ECA acute	15	5.8	333.85	2.1	1203.8	20.0	1.0	0.00059	0.00014
ECA chronic	15	3.7	1.4	0.025	7.1	5.0	1.0	0.00059	0.00014
avg		4.78	5.06	0.34	3.69	8	5.625		
SD		4.24	4.48	0.41	1.65		1.77		
CV		0.888	0.6	1.21	0.6	0.6	0.6	0.6	0.6
ECA acute mult	0.32	0.23	0.32	0.17	0.32	0.32	0.32		
ECA chronic mult	0.53	0.41	0.53	0.32	0.53	0.53	0.53		
LTA acute	1.00	1.32	107.19	0.36	386.52	6.42	0.32		
LTA chronic	2.55	1.51	0.74	0.01	3.74	2.64	0.53		
minimum of LTAs	2.55	1.32	0.74	0.01	3.74	2.64	0.32		
AMEL mult95	1.55	1.84	1.55	2.15	1.55	1.55	1.55		
MDEL mult99	3.11	4.41	3.11	5.81	3.11	3.11	3.11		
AMEL (aq life)	7.87	2.42	1.15	0.02	5.81	4.09	0.50		
MDEL(aq life)	7.40	5.80	2.30	0.05	11.66	8.21	1		
MDEL/AMEL Multiplier (from Table 2, SIP)	A							2.01	2.01
AMEL (human hlth)	A							0.00059	0.00014
MDEL (human hlth)	A							0.00119	0.00028
minimum of AMEL for Aq. life vs HH	7.87	2.42	1.15	0.02	5.81	4.09	0.50		
minimum of MDEL for Aq. Life vs HH	7.40	5.80	2.30	0.046	11.66	8.21	1.0	0.00119	0.00028
Current limit in permit (30-d avg)	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Current limits in permit (daily)		N/A	56	1	71	N/A	N/A	N/A	N/A
Final limit - AMEL	7.87	2.42	1.15	0.02	5.81	4.09	0.5	0.00059	0.00014
Final limit - MDEL	7.40	5.80	2.30	0.05	11.66	8.21	1	0.00119	0.00028
Max Effl Conc (MEC), 1999-2001		14	15	1.5	6	8	10	<0.06	<0.06
Interim Limits			56	1	71				

Date	Flow	Monthly Average Concentration	1/00-12/01 Mass (g/day)	Mass Load (g/day)
	mgd	ug/L	g/day	g/day
Jan-00	0.36	0	0.0000	
Feb-00	0.38	0	0.0000	
Mar-00	0.3	0.2	0.2271	
Apr-00	0.26	0	0.0000	
May-00	0.28	0	0.0000	
Jun-00	0.29	0.21	0.2305	
Jul-00	0.31	0	0.0000	
Aug-00	0.35	0	0.0000	
Sep-00	0	0	0.0000	
Oct-00	0.41	0.2	0.3104	
Nov-00	0.32	0	0.0000	
Dec-00	0	0	0.0000	**0.06401**
Jan-01	0.3	0.2	0.2271	**0.08293**
Feb-01	3.16	0	0.0000	**0.08293**
Mar-01	0.3	0.2	0.2271	**0.08293**
Apr-01	0.32	0	0.0000	**0.08293**
May-01	0.31	0	0.0000	**0.08293**
Jun-01	0.31	0.55	0.6454	**0.11751**
Jul-01	0.35	0	0.0000	**0.11751**
Aug-01	0.31	0.58	0.6806	**0.17422**
Sep-01	0.25	0	0.0000	**0.17422**
Oct-01	0.47	0	0.0000	**0.14836**
Nov-01	0.43	0	0.0000	**0.14836**
Dec-01	0.47	0.002	0.00	**0.14865**
	2.5413			

Count, n		**13**
Maximum MA value, g/d		**0.17422**
Maximum mass, kg/mo		**0.005**
Average Moving Average Load		**0.11596**
Standard Deviation MA Load		**0.038854**
99.7 %tile		**0.174**
Ave + 3SD, g/d		**0.232523**
Ave + 3SD, kg/mo		**0.007**
Mercury Mass Emission Limit =	**0.007**	**kg/mo**

0.47 is 99th percentile flow (omitting Feb 01 flow measurement--seems to be outlier).
Hg MEC= 1.5 ug/L

0.47*1.5= 0.705 g/day

0.021446

Determination of Average, Standard Deviation, and Coefficient of Variation
General Chemical, Corp.

		2001				2000				1999				Number of Data Points	% ND	Calculate or Default CV?	Average	Standard Deviation	Coefficient of Variation (CV)
		4Q	3Q	2Q	1Q	4Q	Selected 3Q	2Q	1Q	4Q	3Q	2Q	1Q						
1	Antimony						<5							1	100	default			0.6
2	Arsenic [b]	110	110	37	37	71			40	85		52		8	0	default	67.75	31.13909	0.6
3	Beryllium						<5							1	100	default			0.6
4	Cadmium [b]	<2	<2	<2	<2; <2	<2		<2	<2	<2	<2	<2	<2	12	100	default	1	0	0.6
5a	Chromium (III)													0	--	N/A			
5b	Chromium (VI)/Total Cr [b]	<5	<5	<5	<5	<5				<5		<5		7	100	default			0.6
6	Copper (303d listed) [c]	6.5	<5	<5	0.3; 0.3	6.3		11	14	<5	<5	<5	6.4	12	41.66667	**calculate**	4.775	4.239667	**0.8878883**
7	Lead [b]	15	<5	<5	<5	8.0			<5	5.0		<5		8	62.5	default	5.0625	4.475628	0.6
8	Mercury (303d listed) [b]	1.5	0.58	0.55	<0.2;<0.2	<0.2		0.21	<0.2	0.2	0.4	<0.2	<0.2	12	50	**calculate**	0.336667	0.408196	**1.2124643**
9	Nickel [b]	<5	<5	5.5	5.5	<5			6	<5		<5		8	62.5	default	3.6875	1.646154	0.6
10	Selenium (303d listed) [c]						8.0							1	0	default	8		0.6
11	Silver [b]	<5	<5	<5	<5	<5			<5	<5		<5		8	100	default	2.5	0	0.6
12	Thallium						<5							1	100	default	2.5	0	0.6
13	Zinc [b]	11	11	32	32	<10			35	<10		54.0		8	25	default	23.125	17.73969	0.6
14	Cyanide [b]	<10	<10	<10	<10	<10			<10	<10		10.0		8	87.5	default	5.625	1.767767	0.6

Background Metals Concentrations
RMP Monitoring Stations
Data Collected 1993 Through 2000

Station	Date	Ag* µg/L	As µg/L	Cd* µg/L	Cr µg/L	Cu* µg/L	Hg µg/L	Ni* µg/L	Pb* µg/L	Se µg/L	Zn* µg/L
Sacramento River	3/5/93	0.0074	1.68	0.0212	8.4	5.23	0.0103	6.66	0.92	0.197	8.4
Sacramento River	5/27/93	0.0566	1.37	0.0309	3.68	3.35	0.006	3.2	0.53	0.153	5
Sacramento River	9/16/93	0.009	2.02	0.0263	4.44	3.74	0.01	3.45	0.69	0.241	8.43
Sacramento River	2/9/94		1.89	0.0224	1.44		0.005	2.52	0.44	0.3	3.74
Sacramento River	4/28/94	0.0155	2.18	0.0442	7.01	5.82	0.0126	5.75	1.51	0.25	11.49
Sacramento River	8/24/94	0.003	2.65	0.0376	2.36	3.44	0.0045	2.85	0.45	0.16	2.75
Sacramento River	2/15/95	0.0068	1.78	0.025	6.62	4.68	0.0066	6.35	0.62	0.14	7.46
Sacramento River	4/18/95	0.0075	1.35	0.025	5.79	4.3	0.0088	4.94	0.8	0.11	5.67
Sacramento River	8/23/95	0.007	1.94	0.02	2.7	2.62	0.0048	2.7	0.5		3.36
Sacramento River	2/14/96	0.006	1.77	0.03	8.2	3.9	0.006	7.6	0.7	0.16	7.4
Sacramento River	4/23/96	0.002	1.21	0.02	4	2.2	0.003	2.5	0.3	0.07	2.6
Sacramento River	7/22/96	0.003	2.08	0.02	5.2	3.3	0.007	3.9	1.2	0.11	5.1
Sacramento River	1/29/97		3.65	0.06	26.13	9.9	0.0377	21.8	2.35	0.14	18.2
Sacramento River	4/23/97		2.07	0.03	3.99	3.4	0.0074	4.6	0.51	0.18	6.1
Sacramento River	8/6/97		2.3	0.03	5.21	2.2	0.0056	4.2	0.65	0.08	4.9
Sacramento River	2/4/98	0.019	3.35	0.05	19.77	6.7	0.0189	11.8	1.75	0.18	16.1
Sacramento River	4/16/98	0.007		0.02	4.91	3.2	0.0006	3.7	0.42	ND	4.8
Sacramento River	7/29/98	0.003	2.31	0.03	4.71	2.8	0.0052	2.9	0.5	0.16	4.6
Sacramento River	2/10/99	0.007	1.25		3.19	2.9		5.3	0.52	0.09	3.1
Sacramento River	4/21/99	0.008	1.48		80.37	3.1	0.0035	3.7	0.36	0.1	3.8
Sacramento River	7/21/99	0.006	2.2		6.04	3.8		5.1	0.87	0.1	5.8
Sacramento River	2/9/00		1.55								
Sacramento River	7/19/00		1.91							0.104	
	MAX	**0.0566**	**3.65**	**0.06**	**80.37**	**9.9**	**0.0377**	**21.8**	**2.35**	**0.3**	**18.2**

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Background Concentrations for PAH compounds
RMP Monitoring Stations
Data Collected 1993 Through 2000

Station	Date	Naphthalene ug/L	Acenaphthene ug/L	Acenaphthylene ug/L	Anthracene ug/L	Fluorene ug/L	Phenanthrene ug/L	Benz(a)anthracene ug/L	Chrysene ug/L	Pyrene ug/L	Benzo(a)pyrene ug/L	Benzo(e)pyrene ug/L	Benzo(b)fluoranthene ug/L	Benzo(k)fluoranthene ug/L	Dibenz(a,h)anthracene ug/L	Perylene ug/L	Benzo(ghi)perylene ug/L	Fluoranthene ug/L	Indeno(1,2,3-cd)pyrene ug/L
Sacramento River	03/05/93	0	0	0	0	0	0.00125	0.00004	0.00037	0.00122	0	0.00004	0.00019	0.00018	0	0	0	0.00123	0.00004
Sacramento River	02/09/94	0	0	0	0	0	0.00056	0.00001	0.00095	0.00123	0.00006	0	0	0.00027	0	0	0	0.00096	0
Sacramento River	04/28/94	0	0	0	0.00006	0	0.00096	0.00061	0.0009	0.00241	0	0.0012	0.0018	0.00057	0.0002	0	0	0.00193	0.0013
Sacramento River	08/24/94	0	0	0	0	0	0.00052	0	0.00068	0.00122	0	0.00053	0.00088	0.00025	0.00021	0	0.0001	0.00105	0.00041
Sacramento River	02/15/95	0	0	0	0	0	0.00039	0	0.00046	0.00063	0.00007	0.00042	0.00062	0.00018	0	0	0	0.00083	0.00014
Sacramento River	04/18/95	0	0	0	0	0	0.00081	0.00008	0.00021	0.00047	0	0.00016	0.00021	0.00009	0.00003	0	0	0.00084	0.00007
Sacramento River	08/23/95	0	0	0	0.00005	0	0.00089	0.00038	0.00108	0.00172	0	0.00071	0.00109	0.00042	0.00067	0	0	0.00096	0.00091
Sacramento River	02/14/96	0.0003	0	0	0.00009	0.00072	0.00148	0.00014	0.00023	0.00103	0.00003	0.0004	0.00033	0.00093	0	0.00002	0.00003	0.00118	0.00017
Sacramento River	04/23/96	0.0007	0	0.0001	0.00002	0.00047	0.00076	0.00016	0.00022	0.00082	0	0.00015	0.00022	0.00008	0.00002	0	0	0.00089	0.00003
Sacramento River	07/22/96	0.0028	0	0.00011	0.00004	0.00056	0.0015	0.00074	0.00077	0.00202	0.00009	0.0006	0.00059	0.00023	0.0001	0	0	0.0022	0.00062
Sacramento River	01/29/97	0.0003	0.00024	0.00012	0	0.00052	0.00146	0.00065	0.00075	0.00116	0	0	0.00113	0.00031	0.00016	0	0	0.00122	0.00075
Sacramento River	04/23/97	0.0006	0	0	0	0.00044	0.00168	0.00063	0.0006	0.00172	0	0.00058	0.00075	0.0002	0	0	0	0.0023	0.00022
Sacramento River	08/06/97	0	0	0	0	0.00018	0.00082	0.00072	0.00058	0.00154	0	0.00065	0.00094	0.00027	0	0	0	0.00176	0.00018
Sacramento River	02/04/98	0	0.005	0	0.0058	0.0021	0.0041	0.00045	0.00061	0	0	0.00046	0	0	0	0	0.00062	0.0013	0.00051
Sacramento River	04/16/98	0	0	0	0	0	0	0	0.00047	0	0.00032	0.00035	0.00061	0	0	0	0	0	0.00034
Sacramento River	07/29/98	0	0	0	0	0.0004	0	0	0.00046	0	0	0.00041	0.00057	0	0	0	0	0	0
Sacramento River	02/10/99	0	0	0	0	0.00023	0	0.0006	0.0003	0.0008	0	0.0003	0.0004	0.0001	0	0	0.0001	0.0011	0.0002
Sacramento River	04/21/99	0.00019	0	0	0	0	0.001	0	0.0003	0.0011	0	0.0003	0.0005	0.0001	0	0	0	0.0012	0
Sacramento River	07/21/99	0	0	0	0	0.0004	0	0.0008	0.001	0	0	0.0014	0.0019	0.0006	0.0002	0	0	0.003	0.001
Sacramento River	07/19/00	0	0	0	0	0	0.00104	0.0011	0.0007	0.00248	0	0.00093	0.0012	0.00035	0	0	0	0.0028	0
	MAX	**0.0028**	**0.005**	**0.00012**	**0.0058**	**0.0021**	**0.0041**	**0.0011**	**0.00106**	**0.00248**	**0.00032**	**0.0014**	**0.0019**	**0.00093**	**0.00067**	**0.00002**	**0.00062**	**0.003**	**0.0013**

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Background Concentrations for Pesticides
RMP Monitoring Stations
Data Collected 1993 Through 2000

Station	Date	Endosulfan I ug/L	Endosulfan II ug/L	Endosulfan Sulfate ug/L	p,p^-DDD ug/L	p,p^-DDE ug/L	p,p^-DDT ug/L	SUM Chlordanes (SFEI) ug/L	Heptachlor ug/L	Heptachlor Epoxide ug/L	Aldrin ug/L	Dieldrin ug/L	Endrin ug/L	Hexachlorobenzene ug/L
Sacramento River	03/05/93	0.000026089	0	0	0.000106	0.000769	0.000052	0.000124	0	0	0	0.000224	0	0.000053
Sacramento River	02/09/94	0	0	0	0.0000521	0.0001919	0.0000104	0.000095	0	0.0000147	0	0.000193	0	0.0000151
Sacramento River	04/28/94	0	0	0	0.00021	0.000298	0.000027	0.000128	0.0000013	0.0000312	0	0.0001795	0	0.000026
Sacramento River	08/24/94	0	0	0	0.000082	0.000142	0.000034	0.000132	0.000011	0.000034	0	0.0000071	0	0.0000164
Sacramento River	02/15/95	0	0	0	0.000053	0.000352	0.000006	0.000106	0	0.000054	0	0.00003	0	0.000011
Sacramento River	04/18/95	0	0	0	0.000127	0.000548	0.000011	0.000083	0	0.000012	0	0.000003	0	0.000032
Sacramento River	08/23/95	0	0	0	0.000099	0.00031	0.000009	0.000116	0.000002	0.000018	0	0.000169	0	0.000003
Sacramento River	02/14/96	0	0	0	0.000192	0.00046	0.000016	0.000096	0	0.000022	0		0	0.000012
Sacramento River	04/23/96	0	0	0	0		0	0	0	0	0		0	0
Sacramento River	07/22/96	0.000002	0	0.00012	0.000234	0.000303	0.000027	0.000227	0	0.000045	0	0.000065	0	0.000041
Sacramento River	01/29/97	0	0	0.000179	0.000347	0.00092	0.000349	0.000256	0.000007	0.000029	0	0.000275	0	0.000029
Sacramento River	04/23/97	0	0	0.0002	0.000241	0.00044	0.000057	0.000302	0	0.000097	0	0.00032	0	0.0000211
Sacramento River	08/06/97	0	0	0.000146	0.000233	0.000304	0.000014	0.00018	0	0.000017	0	0.00038	0	0.0000176
Sacramento River	02/04/98	0	0	0.000007	0		0	0.0001	0	0.000013	0	0.0002	0	0
Sacramento River	04/16/98	0	0.000007	0.0000018	0	0.00032	0	0.00012	0	0	0	0.000002	0	0
Sacramento River	07/29/98	0.0000018	0	0.000195	0		0.000038	0	0	0	0	0.00016	0	0
Sacramento River	02/10/99	0.000036	0.000016	0.000098	0.000139	0.000203	0.000253	0.000087	0	0.000013	0	0.000089	0.000019	0
Sacramento River	04/21/99	0	0	0.000079	0.000045	0.000237	0.000037	0.000058	0	0.000007	0	0.000061	0	0.000015
Sacramento River	07/21/99	0.000007	0.000042	0.000121	0.000102	0.000147	0.000034	0.000062	0	0.0000015	0	0.000053	0.0000037	0.00002
Sacramento River	07/19/00	0	0	0	0	0.000256	0	0.00001	0	0	0		0	0
	MAX	**0.000036**	**0.000042**	**0.0002**	**0.000347**	**0.00092**	**0.000349**	**0.000302**	**0.000011**	**0.000097**	**0**	**0.00038**	**0.000019**	**0.000053**
	Average					0.0003648						0.0001418		

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